

# Hitchcock's Machine Tool Blue Book

APRIL, 1936

THIRTY-FIRST YEAR

HARDINGE Ball Bearing Bench Lathe Uni



1" Collet Capacity—9" Swing—Four Smaller Sizes.

*Ask For Bulletin BB*

HARDINGE BROTHERS, INC., - ELMIRA, N. Y.  
CHICAGO - NEW YORK - DETROIT

Sales Representatives in All Principal Cities

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

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# automatic production sawing at BALL-BEARING SPEED

## New Cutting-off Speed and Economy

Will give you 10 identical pieces 6" round steel, or 160 pieces 1½" round steel (other sizes in proportion) per hour floor-to-floor — hour after hour, continuous, automatic high-speed production.

For cutting-off solid bar stock (gear blanks, etc.) no other sawing or lathe cutting-off equipment can even approach the output or extremely high speed of full ball bearing MARVEL No. 6A and 9A Sawing Machines. Fully automatic (with automatic bar push up) they require no more operator attention than an automatic screw machine.

Combination (dual) positive and friction power screw feeds; full ball bearing construction; quick blade return (shaper ram action); capable of feed loads as high as 1000 lbs. and equipped with **un-breakable MARVEL High - Speed - Edge Blades** that can take it.

Write for Bulletin  
600—describing  
MARVEL Automatic  
Production Saws.

Armstrong - Blum  
Mfg. Co.

"The Hack Saw People"  
241 W. Franklin Ave.  
Chicago, U.S.A.



**MARVEL**

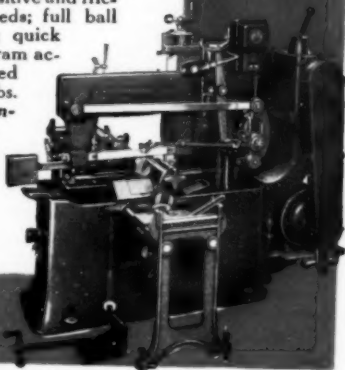
High-Speed  
Sawing Machine

Light Duty  
MARVEL No. 4A  
capacity 6"x6"

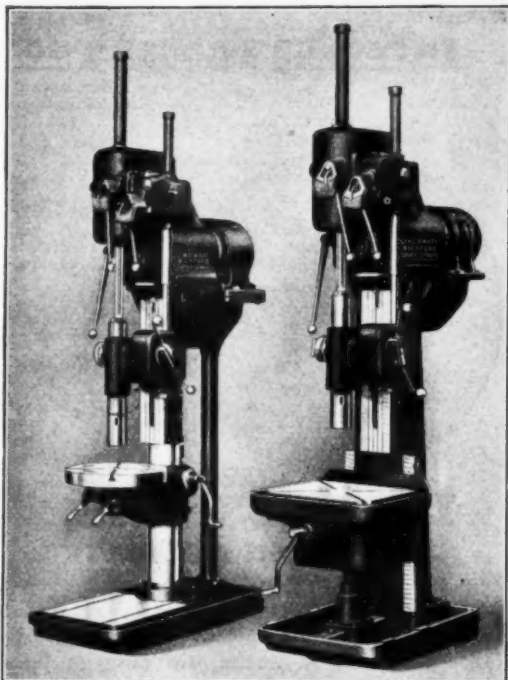
Heavy Duty  
MARVEL No. 6  
capacity 6"x6"

MARVEL No. 9  
capacity 10"x16"

Automatic  
MARVEL No. 6A  
No. 9A  
capacity 6"x6"  
capacity 10"x16"



# For Low Cost Drilling



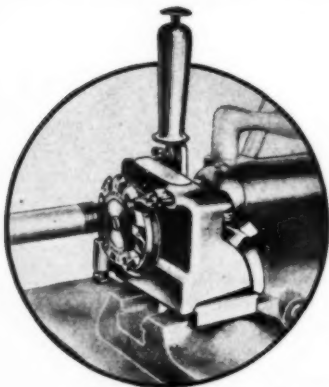
21", 24" and 28" Super-Service Uprights, round and box column types, set a new standard for convenience, stamina, accuracy and general production efficiency. Anti-friction bearings throughout, automatic oiling, no friction clutches. All speed and feed changes instantly obtained thru sliding gears controlled by a single lever.

*Write for booklet U-22H and see the possibilities of these machines*

**The Cincinnati Bickford Tool Co.**  
**OAKLEY, CINCINNATI, OHIO**

*Rivett*

**IMPROVED THREAD TOOL**



**LOW COST THREADS  
IN QUANTITY**

Rivett Thread Tool mounts on any screw cutting engine lathe and cuts any diameter or form (except square) of thread, six pitch or finer. The Thread Tool is a holder for a ten tooth cutter with means for indexing the cutter to present each of the ten teeth successively to the work.

*For complete details see Bulletin 110-A*

**Rivett Lathe & Grinder, Inc.**

Brighton, Boston, Mass.



# Hitchcock's Machine Tool Blue Book

Selected  
Circulation

30,000  
Monthly

APRIL, 1936

THIRTY-FIRST YEAR

## JUST A LITTLE HOMELY PHILOSOPHY

We published this old jingle in a recent issue of our "Wood-Working Machinery", and it attracted so much attention that we are repeating it here:

*"He who whispers down a well  
About the goods he has to sell  
Won't make half as many dollars  
As he who climbs a tree and hollers."*

And if you want your "hollering" about your products to reach any large number of buyers, it means advertising, of course.

And when it comes to advertising, the BLUE BOOK gives the manufacturer of metal-working machinery by far the broadest service for the amount expended. This is not just special pleading; *it's a fact.*

*A trial is convincing  
And we welcome the test*

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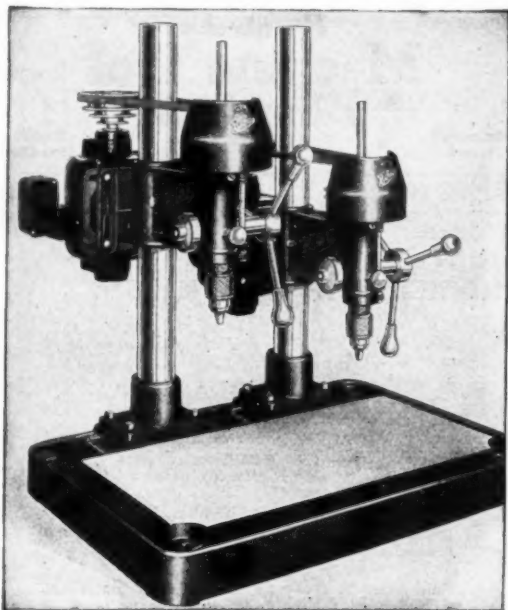
*Published By*

**Hitchcock Publishing Co.**

**508 S. Dearborn St.,**

**Chicago, Ill.**

*Consult the Classified Finding Index for your requirements*



## **This big, accurate "Twin 15" is saving money in many shops**

Sturdy enough to stand-up under production work, accurate enough for the most particular job—this "Twin 15" Drill has made many friends because it does a lot of work at low cost.

One of the complete line of Buffalo Floor and Bench Drills, the "Twin 15" is described in Bulletin 2986.

*WRITE FOR YOUR COPY.*

**BUFFALO FORGE COMPANY**  
**161 Mortimer St., Buffalo, N. Y.**

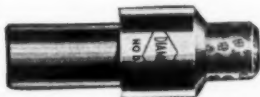
In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

# DIAMITE

## Assures Accurate Precision Dressing!



No. 98—Standard size of holder,  $\frac{7}{16}$ " x  $1\frac{1}{2}$ "; other sizes on request.



No. D-21—Standard size of holder,  $\frac{7}{16}$ " x  $1\frac{3}{4}$ "; other sizes on request.



No. 36—Standard size of holder,  $\frac{7}{16}$ " x  $1\frac{1}{2}$ "; other sizes on request.

Be sure of quality workmanship and lower production costs by using DIAMITE Tools for truing your grinding wheels. They are made of layers of small natural whole diamonds embedded in a proven matrix, thereby presenting a number of sharp cutting points simultaneously to the wheel.

### Adapted for all types of Grinders

These tools can be used to true any type grinding wheel—they require no resetting. Because each stone takes a share of the dressing burden they complete the job quicker as well as maintaining the individual sharp points longer.

*Write for complete information about these profit producing production tools.*

**Representatives in all Principal Cities**

**INDUSTRIAL**

**DIAMOND  
COMPANY**

**1342 Vernor Highway,**

**DETROIT, MICH.**

# Get the facts on— Real Savings!



Will Cut  
All Kinds  
of Tubing

## WELLS BAND SAWS Reduce Metal Cutting Costs from 30% to 50%

### DEALERS WANTED!

For maintenance, tool room or general production works, here's a unit needed by every metal working plant. 99% of trial installations have produced sales. The Wells Band Saws will build volume and profits for you!

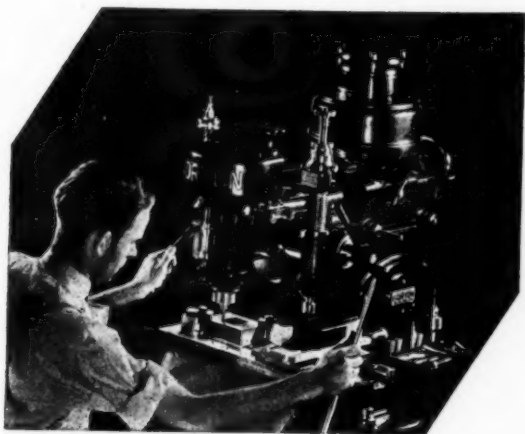
All cutting can be done at high speed without the use of coolant. Rigid saw guides insure constant accuracy. No time lost re-aligning material. Handles any metal—in any shape or thickness up to generous capacity of unit. Sturdy, dependable, designed to stand up under hard service. Look into these advantages.

*Send for the descriptive folder today*

**WELLS MANUFACTURING CORP.**  
315 Seventh Ave., THREE RIVERS, MICHIGAN

# DUPLICATE DIES

*at Half the Cost*



Die-casting and small drop forging dies, multiple and single cavity molds, etc. can be reproduced by Gorton Duplicators at half the cost of the ordinary methods—and with better accuracy. Mail the coupon for Duplicator bulletin.

**GORTON**

George Gorton  
Machine Co.

1115 13th St.,  
Racine, Wis.

Send me your bulletin on Die and Mold Duplicators.

Name.....

Company.....

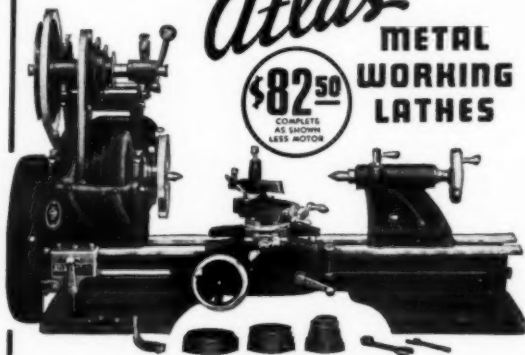
Address.....

# NEW! MODERN!

## Atlas

### METAL WORKING LATHES

**\$82<sup>50</sup>**  
COMPLETE  
AS SHOWN  
LESS MOTOR



## ★ MODERN DESIGN ★ MODERN CONSTRUCTION

The new Atlas lathes were designed and built to give more value—accuracy—efficiency and satisfaction than ever before during the 25 years Atlas has been building precision shop equipment. The back-gear model shown has 36" bed, 10 $\frac{1}{4}$ " swing, and takes 18" between centers. Accurate to .001" for those precision jobs in manufacturing, tool room, or laboratory. Can be fitted with attachments for all machine shop operations.

Other new Atlas metal lathes priced from \$35.50 up. Sold on monthly payments if desired. 2 weeks trial. Money back guarantee. Send for latest catalog of metal and wood working lathes, drill presses, tools, and attachments—illustrating today's outstanding equipment values.

**ATLAS PRESS CO.,** 450 N. Pitcher St.  
Kalamazoo, Mich.

Complete Displays at:

**CHICAGO**

**NEW YORK**

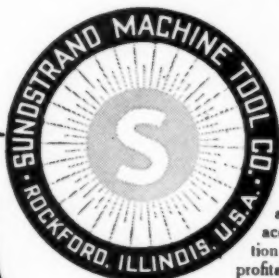
**PHILADELPHIA**

35 E. Wacker Dr. 130 W. 42nd St. 113 N. 3rd St.



## BENCH CENTERS

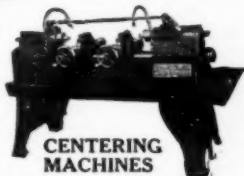
Save time and money in tool-rooms, inspection departments, repair shops, production departments and garages. Accurate, compact, portable. Adjustable heads. Quick-acting spindle. Seven sizes. Low price. *Write, today, for details.*



### BALANCING TOOLS

Made in 5 sizes, with capacities from 800 lbs. to 24,000 lbs. Others for propellers, flywheels, pulleys, etc.

No. 56 illustrated, others available. Fast, accurate, an operation saver, a mighty profitable investment.



### CENTERING MACHINES

These Sundstrand tools, like our Lathes and Milling Machines, cut costs and make work easier. " " " **INVESTIGATE!** Address our Dept. H for details.

# CHECK THESE 5 VITAL POINTS

*... and you will choose*

## SKILSAW DRILLS

*as the Best!*



**1. SWITCH**—Has longer life because of 100% overload capacity and because all the mechanism is fully enclosed in bakelite housing!

**2. MOTOR**—Its greater overload tolerance minimizes heat and lengthens life. Delivers more power under load.

**3. GEARS**—Helical cut gears of tougher, stronger steel last longer and run quiet.

**4. BEARINGS**—Highest quality ground and lapped ball bearings are grease sealed. They are mounted in all positions to compensate for radial and thrust loads, to minimize friction and eliminate vibration!

**5. FRAME**—Die cast aluminum frame is more compact, lighter in weight and 50% stronger!

**MADE IN 14 POWERFUL  
MODELS**

Compare these features with any other drills, and you will find that SKILSAW DRILLS have more engineering refinements. Compare their performance, and you will find that they drill more holes per hour, cost less to maintain. Compare their price and you will find that they cost no more. There IS a difference in drills, ... and SKILSAW DRILLS come through first in every test.

*See Your Distributor or  
Write for Our New Catalog*

**SKILSAW, INC.**

**3304 Elston Av., Chicago**

**210 East 40th St., New York City**

**52 Brookline Ave., Boston**

**312 Omar Avenue, Los Angeles**

**Sales and Service for Canada**

**85 Deloraine Ave., Toronto**

**A Complete Line of 66 Tools  
SKILSAW Portable Electric  
Handsaw - Drills - Grinders  
Buffers - Sanders - Blowers**



# MAKE \$200<sup>s</sup> to \$500

*In Savings on Every \$1000 you*

*now spend on Hand Sanding*



*"One Hand Guides the Sterling"*

## **STERLING Speed-Bloc SANDER (Air-Driven)**

Replaces hand sanding and hand finishing on Metal, Wood and Composition surfaces. Also removes burrs on castings, stampings, etc. Produces oscillating motion. Used and acclaimed by more than 40 industries. Quickly pays for itself, then **PAYS BIG DIVIDENDS.** For both wet and dry sanding. Used on both curved and flat surfaces. Easy to operate.

*Write for literature.*

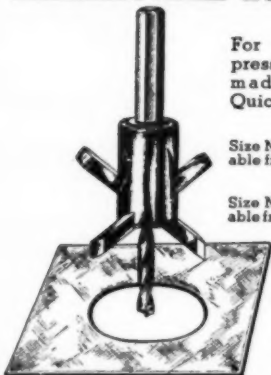
**STERLING PRODUCTS COMPANY**  
314-H Curtis Bldg., Detroit, Mich.



## FLEXIBLE SHAFT EQUIPMENT

Extremely durable flexible shaft machines ranging from  $\frac{1}{4}$  h. p. single speed and multiple speed machines to heavy duty machines complete with full equipment. Prices range from **\$35 to \$105**

## WYCO HOLE CUTTER



For electric drills, drill press or brace. Now made in two sizes! Quickly adjustable—

Size No. 2 $\frac{1}{2}$ , adjustable from  $\frac{1}{8}$ " to 2 $\frac{1}{2}$ " **\$2.50**

Size No. 4 $\frac{1}{2}$ , adjustable from 1 $\frac{3}{8}$ " to 4 $\frac{1}{2}$ " **\$4.50**

### ASK

for new catalog concerning the profit producing **WYCO** line.

**WYZENBEEK & STAFF, INC.**

642 W. Washington Blvd.,

Chicago



## THE KELLERFLEX JB-1

A universal flexible shaft machine for use with grinding wheels, burs, rotary files, polishing equipment, and a large number of special attachments. Available with either bench or roller floor stand, or suspended from overhead. Quarter horse-power motor. Available in different units with speeds as low as 550 R. P. M. and as high as 11,000 R. P. M. Correct design thruout. Non-heating ball bearing handpiece which will run for years without attention. Extremely low price makes it ideal for die, mould and pattern shops, foundries and machine shops. **Write for information.**

**PRATT & WHITNEY**  
**DIVISION NILES-BEMENT-POND CO.**  
**HARTFORD, CONN., U. S. A.**

**IN NEARLY  
A HUNDRED  
DIFFERENT  
WAYS**

**Haskins Flexible Shaft  
Equipment Cuts Cost and  
Speeds Up Production**



*And additional uses are being discovered all the time.*

Light, portable, quickly moved wherever needed . . . as easy to use as a hand tool . . . permits the use of tools and grinding wheels in hard-to-get-at places—*that's* why Haskins flexible shaft equipment is cutting costs and increasing production in thousands of plants in every major metal working industry. It can do the same for you, too! Send for illustrated booklet showing many different adaptations and actual operation pictures. See how this modern, time-saving, money-saving equipment can solve many of *your* production problems. R. G. Haskins Company, 4654 W. Fulton Street, Chicago.

**Haskins**  
FLEXIBLE SHAFT EQUIPMENT  
*with Greater Adaptability*

*This New 1936 Model  
Genuine South Bend*

# LATHE

**\$75<sup>00</sup>**

*Less  
Motor Drive*



9 $\frac{1}{8}$ " x 3' Workshop Bench Lathe with Horizontal Countershaft,  $\frac{1}{4}$  h.p. reversing motor and switch, and belting as shown. **\$98<sup>25</sup>**

This New 1936 model 9" x 3' Workshop Bench Lathe is a back-geared, screw cutting precision lathe, capable of handling the finest, most accurate jobs in manufacturing, in the tool room and laboratory.

Lathe may be fitted with draw-in chuck and collets, grinder, taper attachment, milling attachment and 34 other attachments for all machine shop operations.

*Write for Catalog 15-R*

Shows this lathe in eight different drives and four bed lengths. *Sent Free. Easy Payments. Terms if desired.*

**SOUTH BEND  
LATHE WORKS**

190 E. Madison St.,  
South Bend, Ind., U.S.A.

**FREE! 24 Page Book**



**SOUTH BEND Precision LATHES**

# JUST THE WRENCH FOR PIPES AGAINST WALLS



## The **RIDGID** End Wrench

**I**TS jaws and handle are set at an angle that enables it to grip and turn pipes in coils, against walls, floors, ceilings.

Once used, you'll never be without it.

Has all the features of the regular **RIDGID** — guaranteed unbreakable housing, chrome molybdenum jaws, replaceable heel jaw, full-floating hook jaw with accurate pipe scale, free-spin adjusting nut in open housing. 6" to 36". A valuable part of every kit.

*Ask your Jobber.*

**The Ridge Tool Co., Elyria, Ohio, U.S.A.**

# **RIDGID**

Pipe Wrenches

Cutters

Threaders

Vises

Extractors

**FOOTBURT**



## **A Single Spindle Footburt Sipp Sensitive Drill**

**Made in three  
sizes of single  
and multiple  
spindle models**

### **More holes with this machine**

**Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.**

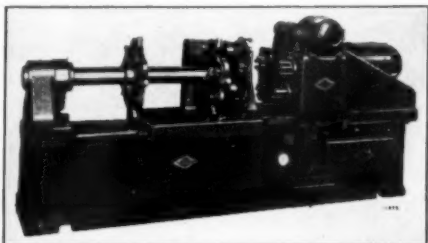
*Write for No. 650 Folders*

**The Foote-Burt Company, Cleveland, O.**

**FOOTBURT**

## THE ROCKFORD MACHINE TOOL COMPANY ANNOUNCES TWO NEW MACHINES

The Rockford Machine Tool Co., 2500 Kishwaukee St., Rockford, Ill., are now marketing the Rockford Hy-Draulic Planer and their new Horizontal Drilling Machine.



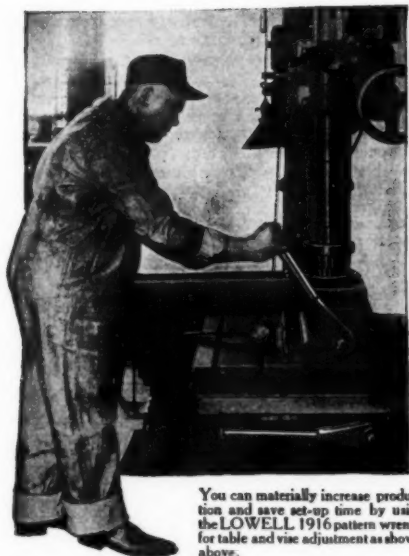
**Rockford Hy-Draulic Planer**

The new Hy-Draulic Planer, here illustrated, was developed in response to numerous requests for a larger machine which came from owners of the well-known Rockford Hy-Draulic Shapers and Shaper-Planers and other sources.

The application of hydraulic power for reciprocating a machine table has numerous outstanding advantages. It eliminates heavy reciprocating or rocking parts, joints, linkages, and gears, from the table drive. It simplifies construction and makes direct application of power most economical. It lengthens the life of cutting edges, and provides a smooth, powerful, steady cutting stroke which can be adjusted instantly to any desired rate within the capacity of the hydraulic equipment. It eliminates "gear marks" on the work and prevents chatter. The cutting speed of the table reaches the established rate almost instantly upon reversal and remains constant throughout the entire stroke. Table reversals occur without shock in a minute period of time. The rapid return-rate of the table is constant, regardless of the cutting speed employed. The manufacturers say that by providing suitable hydraulic equipment, cutting speeds, return ratios, strokes per minute, and metal removed in any given period of time can all be much higher in the Rockford Hy-Draulic Planer than they are in machines having any other type of drive. It is

*(Continued on Page 22)*





You can materially increase production and save set-up time by using the **LOWELL 1916 pattern wrench** for table and vise adjustment as shown above.

## The 1916 Pattern **LOWELL** Reversible Ratchet **WRENCH**

This wrench is the only Reversible Ratchet Wrench on the market that has the reversing mechanism at the end of the handle or lever, with the crushing action on the pawls, absolutely the strongest possible construction. Easily reversible—it takes only one-half of a complete turn of the knurl at the handle end to reverse action from right to left hand. This is a great safety factor also, as there is no danger of the operator's hand coming in contact with cutters or other parts of the machine. Try our "1916's" in your shop—their actions will speak louder than our words.

*Write Today for a Copy of the  
Complete **LOWELL CATALOG "T"***

**LOWELL WRENCH CO.**  
**WORCESTER, MASSACHUSETTS, U. S. A.**

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claimed that, in addition, the hydraulic drive actually increases the useful life of the machine to which it is applied and reduces maintenance cost as compared to other types of drive.

Hydraulic pressure is also employed in this planer for feeding all heads. The feeds, like the cutting speeds, can be adjusted instantly to any desired amount whatever within the capacity of the machine. The feeding movement is very smooth and rapid, being completed before the tools enter their next cut.

### **Rockford Horizontal Drilling Machine**

The new Rockford Horizontal Drilling Machine, shown in the illustration, with automatic hydraulic operating cycle, is equipped with a 5-station fixture and tooling for performing the following operations on the flange of a large crankshaft:

Station 1 — Load and unload workpieces.

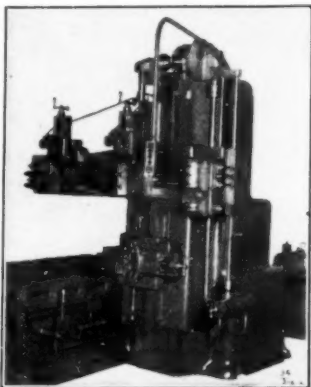
Station 2 — Drill 6 holes, and mill out center of flange.

Station 3 — Drill 2 locating holes.

Station 4 — Countersink 6 holes, and ream 2 locating holes.

Station 5 — Tap 6 holes.

This machine has a large base containing the hydraulic equipment with centralized control, coolant pump, and reservoir. Mounted on the right hand end of the bed is a traveling head having automatic hydraulic cycle of rapid approach, feed, dwell for fine finish on milling and countersinking, rapid return, and stop. Easily adjusted dogs on the lower edge of the traveling head govern its automatic operating cycle. Manual control for setting up purposes is provided by a conveniently placed lever. A central push



*(Continued on Page 24)*

# KRW Hydraulic and Sensitive ARBOR PRESSES

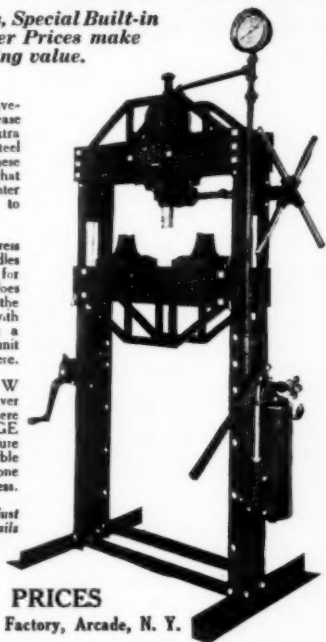
*New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.*

THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this K R W feature as a time and labor saver can be appreciated. Also there is **NO EXTRA CHARGE** for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

*Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.*



## PRICES

F. O. B. Factory, Arcade, N. Y.

No. 37—35 ton Hydraulic and Sensitive Arbor Press .....	\$135.00
No. 37E—50 ton Hydraulic and Sensitive Arbor Press .....	164.00
No. 37F—70 ton Hydraulic and Sensitive Arbor Press .....	275.00
Gauge and fittings, \$15.00 extra on all presses.	

## K. R. WILSON

10-16 Lock Street, Buffalo, N. Y., U.S.A.

EXPORT DEPARTMENT

90 West St., New York, N. Y.

WEST COAST BRANCH

722 Mateo St., Los Angeles

button station provides the operator with complete control of the machine and enables him to stop it instantly at any point in its cycle. If the machine should be stopped for any reason, the taps automatically rotate correctly when operation is resumed.

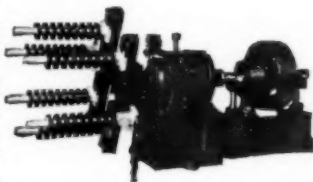
On the front of the head is a detachable plate containing the 23 spindles arranged in four clusters. This construction makes it possible to adapt the machine to engineering changes in work-pieces, or to use it for many other kinds of work merely by making suitable changes in spindle arrangement, tooling, and work-holding devices.

At the left of the traveling head is the 5-station fixture in which two work-holding heads are mounted on a heavy central shaft that rotates in anti-friction bearings for easy indexing. These bearings are contained in two heavy supports accurately aligned and solidly secured to the machine bed. The combination of a 5-station fixture with locating gage, simultaneous operation on 4 work-pieces, and automatic operating cycle results in high production limited only by the longest operation, which is drilling six  $37/64$ " holes,  $1-9/16$ " deep.

The same operating advantages and patented features that are embodied in this machine are also available in other Rockford Drilling Machines of horizontal, vertical, and "way" types for drilling, tapping, boring, and similar operations on a wide variety of work.

## NEW COIL WINDER DRIVE

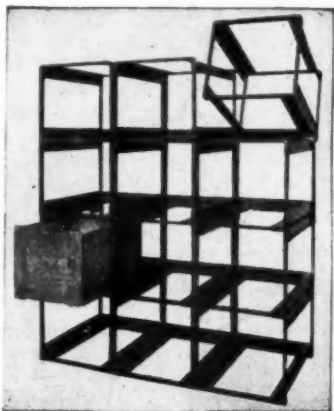
Ideal Commutator Dresser Company, 1441 Park Avenue, Sycamore, Illinois, is bringing out a new, inexpensive Coil Winder Drive, especially developed for use by motor repair shops, industrials, public utilities and others who wind coils.



An important feature of this unit is the ease of speed control which enables the operator to adjust the output speed to exactly fit his requirements while the machine is running; which is accomplished without loss of time in changing gears, through a foot lever control. The foot lever control has four functions: starting, stopping, varying speed and automatic braking.

(Continued on Page 26)

# **... For Stacking and Storage of Boxes and Pans USE STACKRACKS**



*Write for circular.*

*For prices specify  
outside dimensions of  
boxes to be stacked.*

*State approximate  
weight of contents.*

Patents Pending

## **Saves Space, Time, and Labor**

Store boxes and pans in an orderly manner—one on top of the other. Each stored unit is easily and quickly accessible as the top one...each stored unit can be moved, changed or replaced without disturbing any other.

The STACKRACK is ideal for use on assembly floor, in machine shop, under work bench, and for stockroom control. In fact, STACKRACKS can be used to advantage wherever you have a storage and stacking problem. STACKRACKS are made in single units. They are constructed of angle and formed steel parts, welded together. Each rack automatically locks securely in position on the rack underneath.

**STACKBIN  
CORP.**



PROVIDENCE, R. I.

When equipped with a universal type coil winding head, the Ideal Coil Winder Drive winds many different types of coils of different sizes and shapes, such as field, armature, transformer, motor coils and loops with diamond, round, square or rectangular cores.

An important feature of this new drive is its compactness and ease of speed control. Another feature is that the drive so operates as to maintain a constant tension on the wire being wound. An automatic revolution counter is mounted on the front of the drive, in plain sight, recording exact revolutions of the winding head, irrespective of the direction of rotation.

The drive pulley and brake are mounted on a shaft running in babbitted, adjustable self-aligning bearings. The shaft is connected through a flexible coupling to the high speed shaft of the speed reducer.

This coil winder drive can be driven from either a line shaft or by a separate motor; and when motor driven, this new drive does not require a special variable speed motor since any standard constant speed motor can be used.

### **HARDINGE PRECISION BALL BEARING BENCH LATHE**



Hardinge Brothers, Inc., of Elmira, N. Y., have recently designed a new Bench Lathe that features a connected bearing, enclosed head stock. This design, the manufacturers say, permits greater accuracy, allows heavier cuts and permits higher spindle speeds with a heavier enclosed driving belt.

The headstock frame is of the finest grade, seasoned and heat treated alloy iron and has a hand scraped bearing surface to fit the ways of the amply proportioned bed. The spindle is constructed of hardened and ground, both internally and

*(Continued on Page 28)*

## For Storage — or Servicing Stock Right at the Machine



### They're The **HANDIEST RACKS**

Save time and steps by keeping your bar stock, pipe, shafting, etc. on these Handy Racks along-side the operator. Keep stock neatly piled and assorted—instantly available—can be checked at a glance. Excellent for storage uses too. Shipped on **FREE TRIAL**.

*Write for Details Today*

**WM. S. YOHE SUPPLY CO.**

**503 Mahoning Road, N. E.,**

**CANTON, OHIO**

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## IT WILL PAY YOU TO INVESTIGATE MALL MACHINES



*for*  
**Grinding, Sanding, and  
Polishing!**

They save time and speed up production. A type and size for every job!

Write for bulletins and let us advise you regarding the proper MALL unit for YOUR work.

**MALL TOOL COMPANY**

**7742 South Chicago Ave.,**

**Chicago, Ill.**

externally, ball bearing steel. With the ball bearing construction, the spindle is mounted in rotating members to eliminate wear and tear. A spindle pulley is provided with four holes for locking by a substantial pin at the rear of the headstock.

The work load on a sleeve bearing is supported by a film of oil, the functioning of which is dependent upon such variable factors as film thickness, temperature and difference in the grades of oil used. With a preloaded ball bearing, the pressure between balls and races is such as to prevent formation of an oil film and the contact of load carrying members is positively metal-to-metal.

The bearings receive a constantly filtered oil supply from the oil cups located at the rear of the headstock. Both bearing sections are sealed with cork seals to exclude any dirt or foreign matter. Because of the metal-to-metal contact of the ball bearing section, the oil serves as a lubricant between the balls and the bakelite ball separator protecting the surfaces from rust or corrosion.

A lever operated brake is mounted on the headstock with the brake band arranged around the spindle pulley. The band is lined with a non-riveted brake lining which rotates or floats when the brake is applied, thereby presenting an ever changing surface to evenly distribute the load.

The units have a six or eight speed range, forward and reverse, with a speed range of 230 to 2500 RPM. This range is obtained without the use of gears, clutches or loose pulleys.

This new Bench Lathe is said to be positively accurate, being entirely free from vibration and from radial and end play. Its preloaded ball bearings, which have been fully sealed to retain oil and exclude foreign matter, insure smooth performance and a long life.

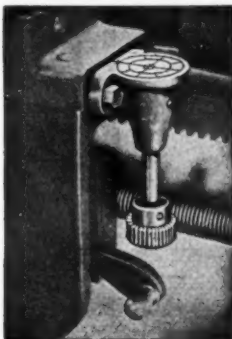
For further information address Hardinge Brothers, Inc., Elmira, N. Y.

## **NEW CATALOGUE ON PRECISION INDICATORS AND GAUGES**

The Federal Products Corporation, of Providence, R. I., have issued their 1936 Catalogue of Precision Dial Indicators and Dial Indicator Gauges. This Catalogue, besides listing the products manufactured by the Federal Products Corporation, goes a step further by illustrating the various applications of indicators to strictly precision requirements and for general use.



# THE E-Z THREAD DIAL



For saving time and cost in cutting internal or external threads of all kinds on engine lathes, regardless of length or diameter. Cuts threads close up to shoulders. Makes a hard job easy.

*The lathe need not be stopped nor reversed until the thread is finished.* Also permits increased speed, due to certainty of stopping at the desired point.

The many repeat orders have demonstrated its worth.

Made in four sizes, to attach to lathe of any size.

Sent on 30 days' trial. Give number of threads on lead screw; state if square, V or Acme thread, right or left hand, and give distance from top of carriage to center of lead screw.

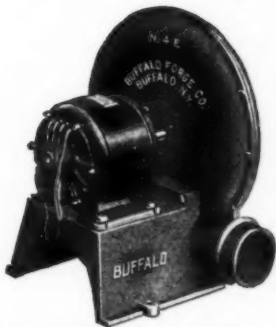
*Where shall we ship?*

**JAMES A. COLVEN**

20 Wolffe Street,

Yonkers, N. Y.

## for **Blowing Oil or Gas** **Furnaces**



for blast to oil and gas furnaces, for cupola blowing—for any job where you need air at pressures up to a pound and capacities up to 7000 c.f.m., there's a Buffalo "E" Blower of the right size to fit your requirements. Full description and ratings in Bulletin 2386.

*If you want information on other Buffalo Fans, write for Bulletin 410-E.*

**BUFFALO FORGE CO.,** 161 Mortimer St.,  
BUFFALO, N. Y.

*In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.*

## CARBIDE TOOL GRINDER FOR USE WITH DIAMOND WHEELS, VITRIFIED CUP WHEELS AND LAPPING DISCS



The Ex-Cell-O Style No. 46 Carbide Tool Grinder, shown in the illustration, is made by the Ex-Cell-O Aircraft & Tool Corporation, 1188 Oakman Blvd., Detroit, Mich. It is designed for rapid, economical grinding and lapping of single point cemented carbide tipped turning, facing and boring tools. Diamond wheels, silicon carbide vitrified cup wheels or diamond lapping discs can be used on this machine. There are three different methods of grinding on this machine: a roughing and finishing cut can be taken with two silicon carbide cup wheels; roughing with silicon carbide cup wheel and finishing with diamond wheel; or

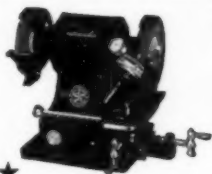
roughing with silicon carbide vitrified cup wheel and lapping with a diamond lapping disc.

Tools up to  $\frac{3}{8}$ " square shank can be rough and finish ground with silicon carbide vitrified wheels on this machine. When grinding with diamond wheels or lapping with the lapping disc, larger size tools can be handled.

The grinder is of the double-end type, equipped with either commercial ball bearings or with Ex-Cell-O Precision Bearings, and driven by a "V" belt from an electric motor mounted in the base of the machine. An adjustable tool support table with a hardened and ground surface is located at each end of the machine with a two-inch adjustment for wheel wear and to obtain the correct rake and angle on the tools to be sharpened. A slot is provided across the face of each table to guide the tool protractor guide and wheel dresser. A graduated scale is provided on each table, enabling an adjustment of 16 degrees above or below center. The protractor tool guide is adjustable through a full range of 180 degrees.

A coolant reservoir is located in the upper part of the wheel head, providing the necessary coolant for diamond

*(Continued on Page 32)*



## PRECISION DRILL GRINDER

No Extras

★ No Attachments



★Grinds 81 drill sizes accurately. Replace uncertain and obsolete drill grinding methods with an up-to-date precision machine. So simple anyone can learn to operate it successfully in half an hour. Capacity for 81 sizes, including 25 fractional drills. Saves as high as 50% of drill cost. Improves quality of work. Powered by A C or D C, 115 or 220 volt ball bearing motor, 3,600 r. p. m.

### STAR



Send for  
Free Catalog

Machine & Engineering Corp.  
Bloomfield, New Jersey

## EFFICIENCY DEMANDS

### THE MODERNIZATION OF BELT DRIVEN MACHINES



EQUIP YOUR LATHES,  
SHAPERS, MILLERS,  
ETC., WITH

### STEEGE DRIVES

Easily Installed, \$40.00 up

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W. L. Steege Machinery Co.

20 S. Clinton Street

Chicago

wheel grinding. Needle valves at each end of the reservoir control the gravity feed of the coolant. Suitable safety and splash guards are provided for each wheel.

The machine is adapted to use silicon carbide vitrified wheels 6" in diameter by 1½" by 1¼", recessed 3" diameter by 1" deep on one side. Steel back abrasive wheels 6" in diameter, 1½" thick with 1¾" wide grinding face on the side, mounted on ⅛" steel back with 1¼" hole may also be used. This machine will take diamond wheels 6" in diameter by ¾" by 1¼" with either ⅜" or ¾" rim or 3" in diameter by 7⁄8" by ½" with ⅜" rim.

A one-third horsepower, 1800 r.p.m., 220 volt, three phase, 60 cycle open frame sleeve bearing motor is used for driving the spindle. Machine can also be furnished for single 110 volt, two or three phase, 220 or 440 volt alternating current, or 115 or 230 volt direct current. A drum type switch is mounted on the front of the machine for starting, stopping and reversing the direction of rotation of the motor for grinding right and left hand tools.

The Ex-Cell-O Corporation is also introducing its new—

### **Carbide Tool Grinder for Peripheral and Face Grinding on Vitrified Straight and Cup Wheels.**

The Ex-Cell-O Style No. 48 Carbide Tool Grinder is designed for grinding all sizes of single point turning, facing and boring tools, right or left hand, high speed steel and cemented carbide tools of the larger size range. Both peripheral grinding on straight type vitrified wheels and face grinding on cup type vitrified wheels can be done on this machine.

The grinder is of the double-end type equipped with commercial ball bearings and driven by a double "V" belt from an electric motor located in the base. Adjustable tool tables with hardened and ground surface are provided for



*(Continued on Page 34)*

## WELDED STEEL PARTS

are not only Stronger-but Lighter for Machine and Tool building. Eliminates heavy Pattern expense. Promotes quicker service and more flexible production.



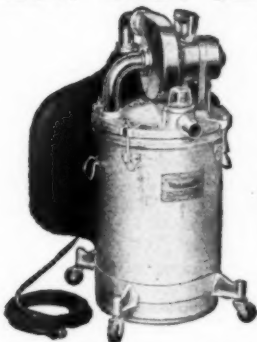
### LET US FURNISH THEM

We will gladly make recommendations, submit prices, either completely machined or welded up only—one or a thousand.

*Send Blue Prints or Sketches for Quotation*

**GEORGE KOCH SONS** EVANSVILLE, IND.  
*Established 1873*

## FOR THE FIRST TIME !! LOW COST PLANT CLEANING



### *with Breuer's Ball Bearing* **TORNADO** Portable Industrial Vacuum Cleaner

Great Cleaning power ( $46\frac{1}{4}$ " waterlift) combined with light weight (only 40 lb.) and sturdy construction make it possible to clean floors, walls, ceilings, overhead pipes, machinery, etc. at less than  $\frac{1}{2}$  the cost of other methods. Also ideal for salvaging metal dust, filings, etc. Motor unit easily detached for blowing.

*Write for free trial offer*

**Breuer Electric Mfg. Co.**  
846 Blackhawk St., Chicago, Ill.

each end of the machine, one for using a straight wheel and the other for a cup wheel as shown in the illustration. If it is desirable to replace the cup wheel with a straight wheel, another table furnished as extra equipment is used the same as shown in the photograph at the left end of the machine. A slot is provided across the face of each table to guide the wheel dresser and angularly adjustable tool protractor. A graduated scale is provided on each table for adjusting the table up to 16 degrees above or below center. The base of the machine is a heavy one-piece casting.

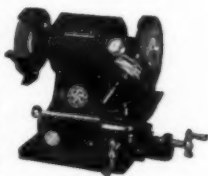
As this machine is designed for dry grinding, a dust exhaust opening is cast at each end of the machine base below the grinding wheels. At the front of the machine base is mounted a tool tray and switch compartment.

The wheel spindle is driven by a one horsepower, 1800 r.p.m., 220 volt, three phase, 60 cycle open frame ball bearing motor. The motor can be furnished for use on direct current if required. The drum type switch which is mounted in the switch compartment is used for starting, stopping and reversing the rotation of the wheels for grinding right or left hand tools. Either 10" by 1½" by 2" straight, or 10" by 2" by 2" recessed 5" diameter by 1" deep on one side, cup wheels can be used on this grinder.

For complete information write to the Ex-Cell-O Aircraft & Tool Corporation, 1188 Oakman Blvd., Detroit, Mich.

### STAR INTRODUCES NEW DRILL GRINDER

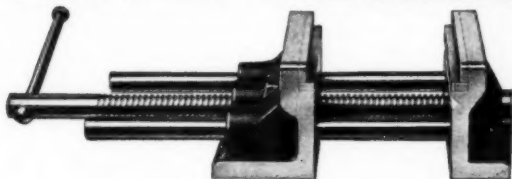
A new Drill Grinder without collets, backstops or attachments has been announced by the Star Machine and Engineering Corporation of Bloomfield, New Jersey. The manufacturers claim the new Grinder will grind 81 drill sizes accurately as well as 25 fractional drill sizes from ⅛" to ½" inclusive, numbered drills from 1 to 30, and all letter size drills.



The Grinder itself has two grinding wheels; one for roughing down damaged or broken drills, the other for finish-grinding. The grinding is done on the peripheral face of the wheel to lessen the tendency of the wheel to burn the drill.

*(Continued on Page 36)*

# A Drill Press Vise —with— Built-In Parallels



No interference from chips or burrs; can be used from three sides. Save time and reduce costs on drilling operations. Two inches clearance for through drilling. *Send for illustrated circular.*

**NATIONAL MACHINE TOOL CO., Racine, Wis.**

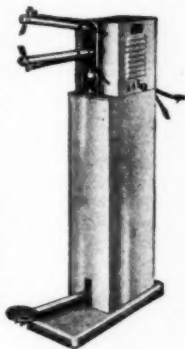
## Cut Your Manufacturing Costs with ACE SPOT WELDERS

MODEL 60, with 12" Throat, Water-cooled Electrodes, welds up to 2 Pieces 16 Ga. Steel for production.

**Price only \$75.00**

ACE SPOT WELDERS adequately provide those essentials to good welding, long and satisfactory service. Designed to serve manufacturers, machine shops, sheet metal shops, wire goods fabricators—any shop interested in eliminating bolts or rivets and in reducing costs. Equipped with many features such as automatic trip switch, easily accessible timing and heat adjustments.

*Sample welds and Literature  
on other sizes upon request.*

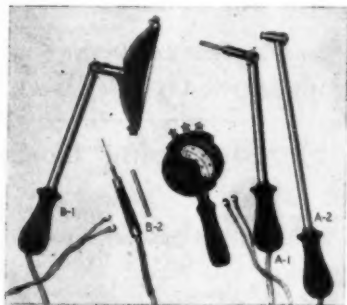


**PIER EQUIPMENT MFG CO., 602 Cross Street,  
Benton Harbor, Mich.**

It will grind the following angles and clearance for cast iron and steel;  $59^{\circ}$  angle of the lips,  $120^{\circ}$  to  $135^{\circ}$  angle of the drill point and a  $12^{\circ}$  clearance of the lips. The  $59^{\circ}$  angle can be changed by adjusting the graduated compound rest to the desired angle. This adapts the Grinder for countersinks and for drills used for cutting soft materials.

The Grinder is powered by a fully enclosed, dust tight, precision ball bearing motor. It can be furnished for either alternating or direct current operating on 50 or 60 cycles at a speed of 3000 to 3600 r.p.m. respectively. Both types are supplied with extension cord, start and stop switch mounted on the front base and provisions for conduit wiring.

### A NEW PYROMETER COMBINATION



The Pyrometer Instrument Co., 103 Lafayette St., New York, has placed on the market a new set of Combination Surface and Needle Pyrometers which is unique and which will find universal application in many industries like die casting, plastic molding, rubber processing,

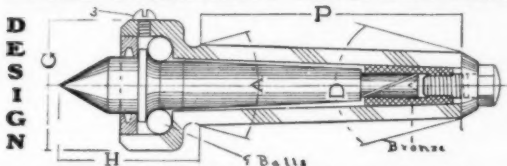
paper, textile, electrical, metallurgical, glass, pottery and many other industries. In fact, there are few industries or shops where the new Pyro Universal Set cannot be used to advantage.

By merely interchanging the various types of thermocouples, a matter of a few seconds, the instrument is transformed into four different types of Surface and Needle Pyrometers. The new indicator is equipped with PYRO patented clamping device whereby contact and reading of actual temperatures no longer have to be made simultaneously—the indicating needle will stay fixed at the correct temperature indicated.

Illustrated literature will be sent on request.



## RIGID RESILIENT LIVE CENTER



## RIGID TRIPLE-LIFE CENTER



### IT OFFERS:

Long Life & Short Overhang

Short Life & Long Overhang

Saves  $\frac{1}{3}$  on initial tool;  $\frac{2}{3}$  on subsequent Inserts.

**Rigid Tool Holder Co., 12281 Turner Ave.  
Detroit, Michigan**

## DRILLING MACHINES

### SIZES

Stationary Head—14"-20"-21"

Sliding Head—24"-28"-31"-36"

These machines were formerly manufactured by the Rockford Machine Tool Company of Rockford, Illinois. Thousands of these machines have been installed and are giving universal satisfaction.

Also manufacturers of the Cleereman Automatically Oiled, Anti-Friction High Speed Drilling, Boring and Tapping Machines.

Builders of drilling equipment for over twenty years.

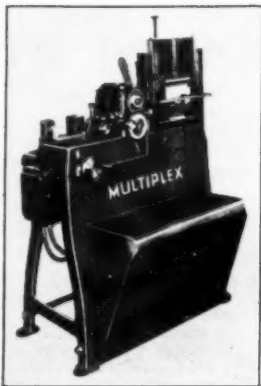
**CLEEREMAN MACHINE  
TOOL COMPANY**

**Green Bay, Wisconsin**

[ Formerly Green Bay Barker Machine & Tool Works ]



## THE "MULTIPLEX" HIGH PRODUCTION WIRE FORMING MACHINE



The "Multiplex" is a machine tool built for the progressive foundry and industrial plant where quality soft wire forming is demanded. It is automatic in operation. The wire feeds into the machine from a reel, is automatically straightened, cut to the desired length and formed with dies to exact specifications. It produces uniform wires that do not have to be fitted again.

With a "Multiplex" the length of wire being produced and formed can be varied while the machine is in operation. Simply loosen the adjusting lock and turn the small hand

wheel which adjusts the cutting of wire to desired lengths. Less than five minutes is required to change dies and adjust the machine for production.

High grade materials are used in the "Multiplex" assuring a precision built machine tool that will give years of efficient production and service. High speed anti-friction and bronze bearings assure minimum power requirements. It is easy to set up, economical to operate.

The manufacturers can furnish inexpensive forming dies to your wire specifications, which used with a "Multiplex" make a complete unit, ready to operate as soon as installed.

The wire forming capacity of the "Multiplex" is up to No. 10 gauge and 21" in length. Its production capacity is 100, 125 or 150 accurately formed wires per minute. A 1 H.P. geared motor on adjustable sliding base is fitted with "V" belt drive having three speeds through pulley and belt adjustment. It requires an operating floor space 3 ft. x 5 ft. and weighs approximately 700 lbs.

Write to the Economy Tool & Machine Co., Muskegon Heights, Mich., for Bulletin No. 100P, which gives a full description of this high-production machine.

**HUNDREDS OF APPLICATIONS  
THOUSANDS IN USE —**



**Wrigraph**  
**PRECISION  
DRAFTING MACHINE**

**At Moderate Price**

**WRIGRAPH**—guaranteed accuracy, instrument workmanship. Brief case and drawing room models. Interchangeable drawing attachments to suit your drawing needs. Each unit is complete with a board and paper clamps. A compact machine for all drawing purposes.

Junior machine complete as illustrated with 10x12" board; parallel device special triangle and paper clamps \$5.

*Write for literature and prices on Larger Models*

**L. C. WRIGHT, INC.**  
5713-16 EUCLID AVE. CLEVELAND, OHIO.

**Engineers, Designers and Welding Users  
AVOID COSTLY MISTAKES**

*Find the Right Answer to  
All Welding Problems in the New*  
**Procedure Handbook of Arc  
Welding Design & Practice**

**586 Pages. Over 700 Illustrations**

● Procedure Handbook is the most valuable work of its kind ever published. Recognized everywhere as the authority on electric welding. Used by prominent engineering schools and thousands of industrial plants.

New edition contains complete and accurate data on all latest arc welding applications and design procedures—everything you need. *Order your copy now!*

**HITCHCOCK PUBLISHING CO.**  
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CHICAGO, ILL.

● This New Handbook may save you thousands of dollars.

**ORDER YOUR COPY NOW**

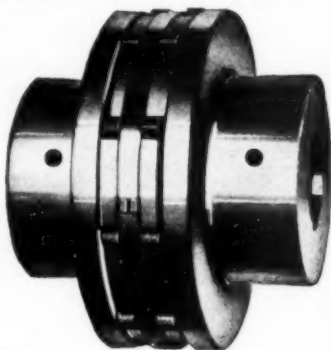


**POSTPAID**

● Printed on fine paper with semi-flexible binding of simulated leather, gold embossed; size 6 x 9 inches.

## A NEW LOVEJOY FLEXIBLE COUPLING

Lovejoy Tool Works, 5026 West Lake Street, Chicago, Illinois, are manufacturing a new type, non-lubricated, heavy duty flexible coupling designated as L-R Type "W". As shown in the illustration, the individual load cushions are free floating between metal jaws and rest upon the



central hub, being firmly and safely secured in place by a spiral steel spring. Cushions are free to move and adjust themselves instantly to any momentary position of the jaws. Due to this improved method of retaining the free-floating load cushions, larger hubs are possible and design likewise permits greater load carrying surfaces and increased load carrying capacity. Load cushions are always in plain sight for inspection and can be removed and replaced in a few minutes when necessary. As there are no metal-to-metal contacts and no wear on the iron or steel jaws, Type "W" couplings are practically everlasting. In operation, one-half of the cushions are idlers (except on reversing loads), hence there is always a set of new cushions in the coupling. Due to this feature, costly and lengthy shut-downs are eliminated, as load cushions can be interchanged when machines are not in productive operation without tearing down coupling.

There are three types of resilient cushioning materials available: Metalflex, Leather Load Cushions and Multiflex Cushions.

The manufacturers state that the L-R principle of carrying the load on free-floating load cushions has been thoroughly tested for seven years, and that L-R Couplings are giving efficient trouble-free service, safe-guarding the connected machines against shocks, overloads and misalign-

*(Continued on Page 42)*

## "OHIO GEARS AND REDUCERS"

( NEW 1936 EDITION )

Send for your copy **TODAY** →



NAME .....  
 POSITION .....  
 ADDRESS .....  
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**THE OHIO GEAR CO.**  
 1331 EAST 179<sup>TH</sup> STREET  
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 OHIO

# Moto-tool

**does Many Tedious Jobs**

The D-E Moto-tool grinds, drills, engraves, sharpens, carves, polishes and does hundreds of jobs **quicker, better and with greater precision.** Its light 6 oz. weight gives perfect balance with the tool edge and perfect tool control. Less wear on tools. Handles easily as a pencil.

Powerful and sturdy as similar tools twice as heavy. 110 v. universal motor—about 20,000 R.P.M.—oiless, self-aligning and ball thrust bearings mounted in felt oil retainers. Handy built-in, off-and-on switch. Easily replaceable brushes. Universal collet chuck. Hardened tool steel replaceable spring collets. Efficient cooling system permits continuous use. Bakelite housing. You must see and use it to appreciate its *tremendous value*

Only  
**\$9<sup>85</sup>**



**10-day TRIAL**

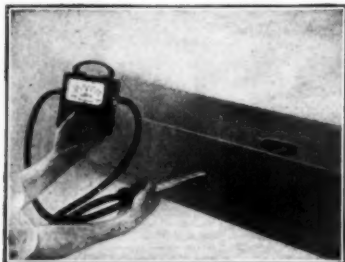
Money refunded if not highly satisfied.  
 Write **TODAY** for free illustrated booklet.

**DREMEL MFG. CO.**

584 Ct., Racine, Wis.

ments on even the heaviest machinery. They are made in standard sizes with bores from 3" to 14" (18 to 2000 H.P. at 100 R.P.M.) By application of suitable materials and design, capacities can be materially increased without change in overall dimensions. Further information, details and literature on L-R Type "W" Flexible Couplings may be had upon request to the manufacturer.

### ILLINOIS TESTING LABORATORIES DEVELOP NEW AIR VELOCITY METER



The Illinois Testing Laboratories, Inc., of Chicago, Illinois, have designed a Meter for instantaneous air velocity readings. A scale on the front of the Meter, by a movement actuated by the air passing through the Meter, indicates the

actual air velocity without the necessity for further mathematical calculations.

In practice the air creates a movement comprising a vane to which a pointer is attached, control hair springs, a double pivoted, double jeweled movement and a magnetic damping system. This movement registers the air velocity upon the pointer on the face of the Meter, giving the direct air speed measurement.

Air velocities as low as 20 feet per minute and as high as 6,000 feet per minute can be accurately recorded, depending upon the use for which the Velometer, as it is called, is furnished. To attain this range three models have been put into production. The first, the shutter type, provides for changing speed ranges by means of a shutter. The second or orifice type uses an orifice fitting which is either attached or detached for range selection. The third or tube type requires the additional tube fitting, tube and jet for high range readings.

These instruments are housed in an attractive black moulded plastic case  $5\frac{1}{4}$  inches by  $5\frac{3}{4}$  inches by  $2\frac{3}{8}$  inches in size and weighs approximately two pounds. For com-

(Continued on Page 44)

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**CAD**  
**Standardized**  
**set-up appliances**

Why force your men to waste time on machine tool table set-ups when CAD standardized appliances will convert this non-productive time into productive labor?

**STANDARD SHOP  
 EQUIPMENT CO., Inc.**  
*Set-up appliances for machine tools*  
 8135 Tinicum Ave., Phila., Pa.

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## A Complete Line

Counterbores and Countersinks, Counterbore Sets, Spotfacers, Coredrills, Reamers, Hollow Mills, Full Floating Holders, Facing Heads, Form Cutters, Boring Bars, Boring Heads, Adjustable Extension Holders, Multi Diameter Tools.



WRITE FOR CATALOG

**THE GAIRING TOOL CO.**

1635 West Lafayette Blvd.,

Detroit, Michigan

plete information address the manufacturers, the Illinois Testing Laboratories, Inc., 420 North La Salle Street, Chicago, Illinois.

## NEW OLIVER UNIVERSAL CUTTER GRINDER

The new Oliver Universal Tool and Cutter Grinder is the result of many years development by the Oliver Instrument Company, the present style having been in use in their own tool room for the past five years.

The design deviates from the standard type of cutter grinder in many ways. It will not do cylindrical, internal or surface grinding, the manufacturers believing that these operations can be better handled on machines

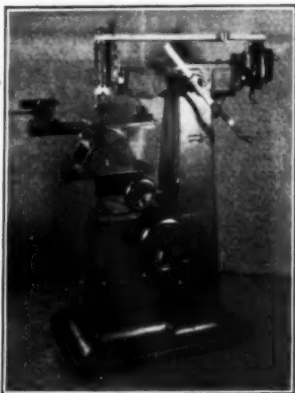
specially adapted to that purpose. By eliminating these features they make their machine more adaptable, rapid, and accurate for the purpose of grinding the general run of cutters and reamers.

The feature of the machine is a universal fixture having adjustments in all directions and arranged to hold a few simple tool holding fixtures.

The grinding wheel is reciprocated by means of a ram, the wheel being mounted at the front and the motor at the back, the two being connected by a belt. The working parts (ram, spindle and motor) are all located above the grinding wheel and away from the flow of emery. They are also carefully protected from dust and dirt.

When grinding a cutter, the work is directly in front of the operator and the tooth being ground is always in view. It is not necessary to stoop or sit in order to see or operate the machine.

The manufacturers have made a special study of liprests and provide sufficient equipment with short, strong rests to



(Continued on Page 46)





**HIGH  
SPEED**

# TAPPING

## ATTACHMENTS FOR YOUR DRILL PRESS

New tapping attachment taps holes perfectly at tremendous speeds. Equipped with double cone friction clutch; ball bearings, heat treated reversing mechanism. Simple to operate. Economical to maintain. Smooth, sensitive and compact.

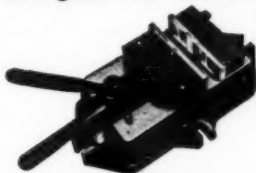
*Write for Literature.*

**PROCUNIER SAFETY CHUCK CO.**

**14 So. Clinton St.,**

**CHICAGO, ILL.**

**Designed for Modern Production Needs !**



## Hartford Milling Vise

### **Quick Opening—Tremendous Binding Power**

Modern production milling work demands efficient aids. Thus, when the old type screw vise proved inadequate—a time and money waster—a large New England manufacturer developed the Hartford Milling Vise which affords the utmost in dependability, efficiency and economy. Its lower cam-faced handle gives you quick-opening and return, and the top eccentric lever handle exerts tremendous binding force. With little practice, both levers can be locked or unlocked with one hand.

*Write for Complete Information.*

**We also Build Machinery on a Contract Basis and Design and Develop  
Special Automatic Machinery—Gears Cut to Order.**

**Hartford Special Machinery Co., 285 Homestead Ave.,  
HARTFORD, CONN.**

handle any cutter easily. Clearance is obtained by tilting the grinding wheel to the desired clearance angle by direct reading—no tables or computations are necessary. Teeth may be backed off without changing the setting of the cutter. Angular cutters, dovetail cutters, and the end teeth of end mills, which are usually difficult to hold and grind accurately, are easily handled in this machine. Graduations are large, and correct angles easily set.

The machine is driven by a  $\frac{1}{2}$  HP. motor and weighs approximately 1000 pounds. It is easily understood and easily handled and is extremely rapid in operation.

For complete information write to the Oliver Instrument Company, Adrian, Michigan.

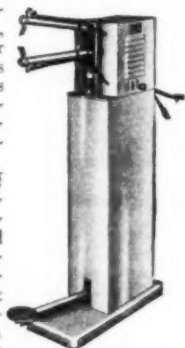
## PIER EQUIPMENT BUILDS NEW SPOT WELDER

The Pier Equipment Manufacturing Co., of Benton Harbor, Mich., announce a new Spot Welder for welding two steel pieces as thick as 16 gauge. The new machine is equipped with two water-cooled electrodes, a deep 12" throat, easily adjustable trip switch and welding pressure, and direct lever action.

All adjustments are on the front of the welder, making them easily accessible for instant changes. The automatic trip switch, entirely enclosed with the timing adjustments extending to the front of the welder, provides for safety as well. The direct lever action develops a welding pressure of 5,000 pounds per square inch with a foot pressure of only 100 pounds, resulting in less fatigue to the operator. The pressure changes are made by merely turning one nut.

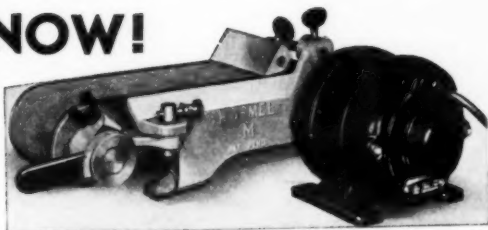
This new Spot Welder has solid copper horns, held by heavy wire clamps which allows them to be rotated to either side when desired. The horns themselves are reversible; one end being machined to hold electrodes at right angles, the other end being machined to hold electrodes at 45° angles in order to reach hard-to-get-at places.

The machine is equipped with a three-point plug-in type heat control switch for adjusting the current to meet the needs of various materials, one set of straight and offset tips of Mallory alloy, and a leak-proof Morse taper. The whole



*(Continued on Page 48)*

# NOW!



*An Inexpensive*  
**ABRASIVE BAND GRINDER—**  
*“Built Like A Machine Tool”*

The Hormel-M Grinder is sturdily built with a supporting leg under the grinding table to eliminate vibration and tipping due to pressure on belt. Ball bearing throughout, equipped with Alemite lubrication, complete with grease gun. *Write for illustrated folder on this and other styles and sizes.*

**HORMEL-M GRINDER**  
**WALLS SALES CORP., 96 Warren St., New York, N. Y.**

## Gem Drill Press Vises

No. 1  
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Price  
**\$18.00**

**Made of Malleable Iron.**  
**Tool steel jaws with “V” grooves and**  
**accurately ground.**

Length over all.....	12"	Depth of jaws.....	2"
Width.....	4½"	Jaws open.....	3½"
Height.....	4"	Weight.....	18 lbs.

**We also manufacture larger vises**

*Circular on request*

**J. E. Martin Tool & Die Works**  
 518 W. State St., Springfield, Ohio

unit has been modernistically designed and rigidly constructed. The welder head is fully enclosed in a steel case, amply ventilated, with a cast front providing rigid support for the horns and switch mechanism.

### **UNDERNEATH BELT MOTOR DRIVE ON THE NEW 1936 MODEL 9-INCH "WORKSHOP" LATHE**

The South Bend Lathe Works, South Bend, Indiana, announces that the new 1936 Model 9-Inch "Workshop" Lathe is now available in the Underneath Belt Motor Drive.



The lathe is mounted on either a frame or cabinet bench, while the underneath motor drive unit and motor are supported on a pivoting frame to the underside of the bench top. The belt tension release crankhandle controls the position of the frame and countershaft. When the tension release crankhandle at the front of the cabinet is moved in a semi-circle the entire driving unit is lifted vertically about  $2\frac{3}{4}$  inches, so that the spindle belt may be shifted. Any adjustment in the tension of the spindle belt can be secured by a turnbuckle attached from the crankhandle to an arm of the countershaft. A hinged cover encloses the headstock, which can be raised upward when desiring to shift the

*(Continued on Page 50)*

## SMALL GEARS



ALSO  
MEDIUM SIZES IN ALL TYPES  
AND MATERIALS

**Massachusetts Gear & Tool Co.**  
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We manufacture "Supreme" Band Saws, for every cutting problem. We are also manufacturers of Supreme Super-Duty Shear Blades and machine Knives. *Write for descriptive literature.*

Certain territories open for responsible dealers.

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SAWS - MACHINE KNIVES - TOOLS  
6527-29 Carnegie Ave., Cleveland, Ohio

cone pulley belt. The 9-inch "Workshop" Underneath Belt Motor Driven Lathe is fully covered by patents.

This new lathe may be bought in either the flat belt or the V-belt style. The former has a three-cone headstock providing six spindle speeds which range from 39 to 630 R. P. M. The V-belt style has a four-cone headstock with eight spindle speeds which range from 44 to 585 R. P. M. Both cut screw threads from 4 to 40 per inch, and with a fine screw thread cutting attachment the number is increased to 80 threads per inch.

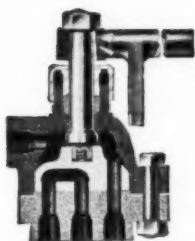
Several new features of the Adjustable Type Underneath Motor Drive include: Down drive to the lathe spindle, insuring a powerful, silent and efficient drive; completely enclosed mechanism with no moving parts exposed; screw type belt tension adjustment for any desired pulling power; belt tension release for shifting belt to change spindle speeds, and an absence of overhead obstructions to impair vision. In addition, the 1936 Model 9-Inch "Workshop" Lathe features ten new improvements, among which are: The new twin gear reverse for right and left hand threads and feeds, a ball thrust bearing on the headstock spindle, larger spindle bearings, felt shear wipers on saddle, etc.

The bed and bench legs of this style lathe are a one-piece casting of 50% steel and 50% nickel iron. Bed lengths are offered in 3-ft., 3½-ft., and 4-ft. Each 9-inch "Workshop" Lathe bed has three V-ways and one flat way accurately planned, seasoned and handscraped, so that headstock, tailstock and carriage are in accurate alignment to within limits of .001". 64 major tests insure this degree of accuracy in all South Bend Lathes.

The headstock casting is reinforced and webbed, giving it strength and rigidity, and its base is machined and handscraped to accurately fit the lathe bed. It is aligned by the inside V-way and inside flat way, and permanently held in place by a strong, substantial clamp.

The added features of conveniency in size, adaptability in the complete fitting of attachments, and of a new low price make the 9-inch "Workshop" Lathe a very paying investment.

Readers may obtain further information about this lathe from the Technical Service Department, South Bend Lathe Works, South Bend, Indiana, mentioning this magazine.



## Two, Three and Fourway Valves

Foot Operated  
Lever Operated  
Also Solenoid Operated

It may be a simple matter to change a leather washer in an air valve to stop a bad leak, but it isn't the cost of the change that is important, it is the cost of the air lost during the weeks prior to the change. Further, this air loss and leather washer change in some makes of valves continues on year in and year out. Nicholson Valves are made of non-corrosive metals, are soap bubble tight, and remain so over periods as long as six years without maintenance of any kind.

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Every minute spent by your high-priced mechanics in digging out broken taps is a dead loss. When a tap breaks it should be *removed quickly with*

### The Walton Tap Extractor

This handy tool has steel fingers which back out the tap *without injuring the threads*. It will save you many hours in the course of a year—paying for itself over and over again. Made in three and four-flute styles.

*Try One in YOUR SHOP—  
Sent on 60-day Trial Basis*

**The Walton Company**  
95 Allyn St., Hartford, Conn.

Foots Bros. Gear and Machine Corporation of Chicago recently appointed Mr. H. S. Thayer, 136 Milnor Ave., Syracuse, New York, as representative in the Central and North Eastern part of the State of New York. With this new arrangement New York State is completely covered by Mr. Mosedale in Buffalo, Mr. Thayer of Syracuse and Mr. Phillips, Eastern Sales Mgr. in New York City.

---

The Wardwell Manufacturing Company, 3167 Fulton Road, Cleveland, Ohio, have recently issued their new Catalog No. 36, which illustrates a full line of Saw Sharpening Machinery and Tools for metal and wood.

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### **WYZENBEEK & STAFF, INC., INTRODUCE NEW FLEXIBLE SHAFT MACHINE AND NEW SIZE HOLE CUTTER**

Wyzenbeek & Staff, Inc., at 642 Washington Blvd., Chicago, have added a new style Flexible Shaft machine and a larger size Hole Cutter with a maximum cutting range of 4½" to their line of machine tools.



The new model Flexible Shaft Machine, No. 10-B, is a bench type, set on a swiveling tripod having rubber feet. The five foot flexible shaft is covered with rubber and is powered with a three-speed V-belt drive. An eccentric adjustment is provided for belt take-up.

*(Continued on Page 54)*



# ARMSTRONG

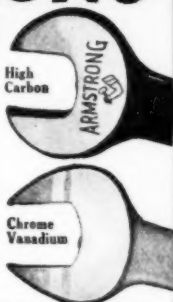
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for Catalog  
W-35

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Plainwell, Michigan

*Manufacturers of Factory & Office Steel Equipment*

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A Complete Line of Steel Stools and Chairs  
Bench Legs—Bench Drawers—Work Benches.

### No. 440 Steel Stool, with Back Rest

Durable All Steel Stool with heavy concave steel seat. Legs, angle steel with ball turned feet formed as an integral part, they cannot become loose no matter how rough the usage. Cross braced between the stretchers for extra rigidity. Adjustable Steel Back Rest. Green baked enamel finish.

### No. 40 Steel Stool, without Back

This is the stool as illustrated and described above but without the back rest.

*Furnished in even sizes from 16" to 26" high.  
Also supplied up to 36" high with two rows of stretchers.*

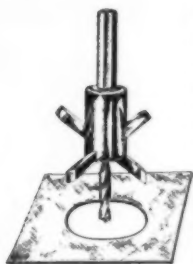
*Representatives in all principal cities*

Chicago, 'phone Randolph 1570 Cleveland, 'phone Yellowstone 3426  
New York City, 'phone Barclay 7-5559 or 7-5560



No. 440

The machine is made in two sizes with a great variety of attachments, making it suitable for all-around shop service.



The Wyco adjustable Hole Cutter is also manufactured in two sizes. The smaller size, designed to cut holes up to  $2\frac{1}{2}$ " maximum, was introduced last year. This year because of the demand for a larger size, a new Hole Cutter was designed to accommodate a maximum hole cutting range of  $4\frac{1}{2}$ ".

The new Hole Cutter is of the same design as the smaller one. It has a hexagon shank which holds without slipping in drilling  $\frac{1}{2}$ " or larger. The standard high speed tool bit cutters are replaceable as well as the twist drills used as a pilot.

For complete information write to Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago.

---

A small colored folder of industrial Wagon Trucks for handling both hot and cold iron and steel products inside the plant has just been issued by the Lewis-Shepard Co., manufacturers of handling equipment, Watertown, Mass. Copies will be sent free upon request.

---

The Automatic Temperature Control Company, Inc., of Philadelphia, Pa., have designed two new types of multi-position controllers for regulating furnace temperatures with a minimum disturbance to furnace atmosphere. Both units produce a corrective movement in the valve or damper in the exact relation to the departure from the temperature setting as measured by the actuating instrument.

---

The Illinois Testing Laboratories, Inc., at 420 N. LaSalle St., Chicago, Ill., have recently published a complete circular on direct reading air velocity meters. It contains information concerning shutter type, orifice type and tube type meters for registering air velocities.

# **WISE**

A good one for Driller,  
Miller, Shaper, or Planer.

6", 9" and 12" Jaws

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or  
*H. S. Drilling  
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Increases  
the Speed  
3 Times



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Fig. 2

Without Jig  
Attachments

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to suit Turret

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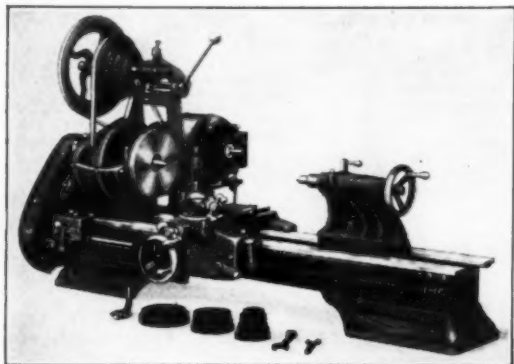


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## ATLAS ANNOUNCES NEW MODELS

Stream line designs and new scientific weight distribution, together with mechanical features never before incorporated in metal lathes of their size and price, mark the complete new line just announced by the Atlas Press Company, Kalamazoo, Mich.



Atlas engineers and industrial designers started work on the new models two years ago. In the meantime countless tests have been made under actual shop conditions and scores of refinements have been worked out. The new Atlas lathes are brand new in appearance, more accurate, handier to work with and still within the low price range.

As the result of this wide experimentation and careful testing Atlas now offers the small lathe operator for the first time, an extremely accurate and highly efficient piece of shop equipment.

Atlas officials point out that these new lathes are not a deluxe addition to its present line, but a new standard of lathe values.

To obtain simplicity and accuracy, the Webber Gages, Inc., 2519 Vestry Ave., Cleveland, Ohio, have designed a Comparator based upon the principle of a single lever. Containing only two moving parts, the vertical spindle carrying the contact feeder point, and a horizontal beam carrying the indicating hand, it may be used for the finest gauge inspection or production gauging.



*Send for a new catalog showing other sizes and styles*

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---



## **Acme Standardized Drill Jig Bushings**



Acme Drill Jig Bushings are a standardized product, carried in stock for prompt delivery in over 6,700 standard items. They are completely finished and ready for use. The Bushings are made by the most exacting scientific methods, which insures long wear, accurate fit and absolute satisfaction. Special sizes made to order.

*Send for our Bulletin, which gives complete details, sizes available, and low prices.*

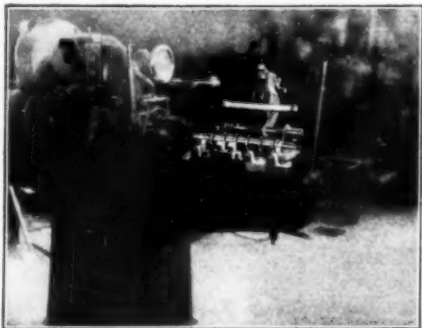


**ACME INDUSTRIAL CO.**  
**419 N. Carpenter St., Chicago**



## LANDIS SPECIAL WORK HOLDING FIXTURE

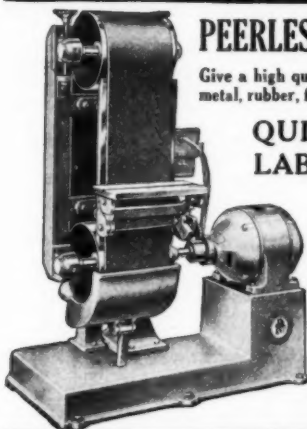
A work holding fixture designed to maintain concentricity between both ends of a threaded part has been placed on the market by the Landis Machine Company of Waynesboro, Pa., for use on its Threading Machines.



The illustration shows this fixture applied to a Landis Single Head Leadscrew Motor Driven Threading Machine as used for threading both ends of a Diesel Engine cam shaft. A  $\frac{7}{8}$ " Hardened and Ground LANCO Head is used for cutting the threads. In this case especially close tolerances were placed on the concentricity of the two ends. To insure this concentricity the cam shaft is held in V grips made of hardened steel and gripped on the bearing surfaces at each end of the cam shaft and is clamped in position by a special self-aligning clamp which is shown in the open position.

The fixture is attached to the carriage of the machine and can be adjusted to obtain the required alignments. The rear locating plate can be adjusted for different lengths of cam shafts.

The design of the fixture is so flexible that it can be adapted very readily for holding other types of work requiring the threading of both ends in true alignment and can be furnished for any size Landis Threading Machine.



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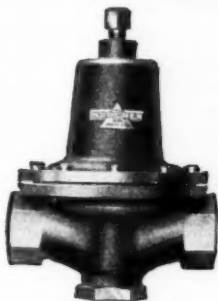
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**Vertical  
or horizontal  
4' to 20'**

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and  
Reducing  
Valves**



For air, steam, oil, water and non-corrosive gases. Wide range of pressures up to 400 lbs. initial—5 to 200 lbs. secondary. Unrestricted flow, close regulation. *Write for complete description and prices.*

**C. A. NORGREN CO., (Inc.)**  
2012 Market Street, Denver, Colorado

The Onsrud Machine Works, Inc., at 3910 Palmer Street, Chicago, Illinois, have announced a new Air Turbine Grinder. The manufacturers claim that it can rotate grinding wheels, rotary files and cutters at speeds as high as 50,000 r.p.m. with the same dependability as speeds 1/10 as high. The Grinder weighing only 1 pound and 15 ounces has a patented impulse reaction turbine rotor. Its centralized balance drive is not affected by the cooling action of the air or by overloading. Run on ball bearings it has an automatic lubricating system which applies an atomized film of oil. Powered by a 1/4 h.p. motor it exerts an air pressure of 90 to 100 pounds with an air consumption of 8 cubic feet a minute.

---

A special Gear Shaper which is arranged especially to make use of the new cutter known as the "gap-type" has been placed on the market by the Fellows Gear Shaper Co., of Springfield, Vermont. This cutter is adaptable to rough and finished cutting of external spur and helical gears in one operation. The gap permits loading and unloading of the work without withdrawing the cutter. The machine is arranged for motor drive and automatic electrical control to stop it when the cutter gap is in the best position to insert and remove the work.

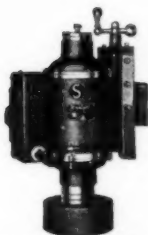
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A Portable Electric Sander called the U-58 and intended for sanding, grinding, cleaning, preparing automobile bodies for paint jobs, smoothing wood surfaces and every application involving sandpaper or emery, has been brought out by the Independent Pneumatic Tool Company, 612 W. Jackson Boulevard, Chicago. The new machine is said to possess perfect balance and ease of handling besides permitting the most efficient operation. Parts can be taken apart for inspection and cleaning with exceptional ease. It is equipped with a seven-inch flexible rubber pad and a box of twelve assorted abrasive discs.

---

A special Pipe Machine able to cut, thread, ream, and chamfer all sizes of pipe from 1/8" to 2" in diameter, has been announced by the Beaver Pipe Tool, Inc., of Warren, Ohio. The machine is available in two models—standard and special, the first having knife type cut-off and automatic feed, and the latter equipped with wheel and roller cut-off and manual feed. Controls are easily reached by the operator. Housings, body castings and carriage supports are constructed of selected grade nickel-iron, insuring strength and durability.





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Drawn Shell Motor. SKF Precision Ball Bearings, with special thrust bearing.

2, 3, 5, 7½ and 10 H. P. sizes, 1750 or 3400 R. P. M. For straight face or cup wheels.

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ONLY  
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No. 0  
Widths 2½"  
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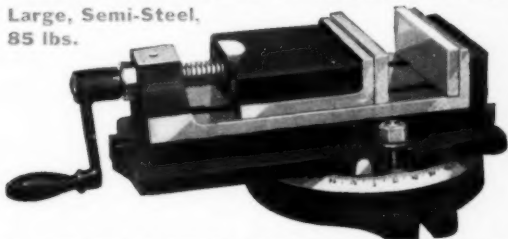
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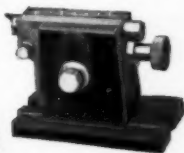


This large semi-steel vise which can be used plain or swivel is suitable for milling machine, drill press or shaper. Has sturdy  $6\frac{1}{2}$ " steel jaws, 2" deep. Jaws open  $4\frac{1}{2}$ ", or  $5\frac{1}{4}$ " without steel jaws. Four bolts and key slots provide for attaching to machine table holding surface and jaws at right angles or parallel to table. **\$29.50**  
Shipping weight 90 lbs.

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L-W Dividing Head is well constructed with parts specially hardened. Swivel graduated to 180°. Graduated spindle and index plunger provide quick indexing. Lapped in worm wheel and worm. Better adjustable worm gear to take up backlash. Built for long wear at low cost. **\$125.00**

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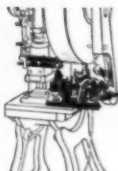


Full  $\frac{1}{3}$  H. P. motor  
3450 R. P. M. Over-  
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mounted in dust tight  
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2-7" Dia. x  $\frac{3}{4}$ " face wheels (Not the usual  $\frac{1}{2}$ " face wheels).  
Inclosed Guards, Adjustable for wear of wheel. Sub-  
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Types for every requirement—  
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Automatic Self-Centering, Ball-  
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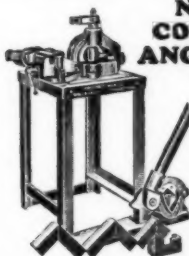
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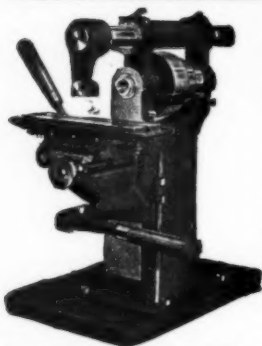


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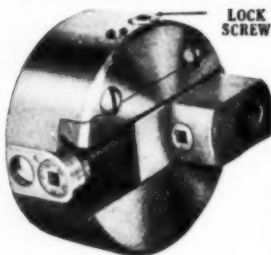
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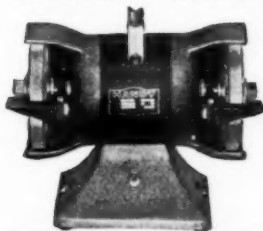
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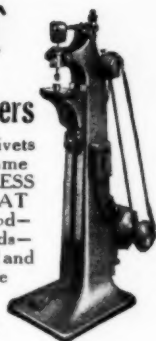
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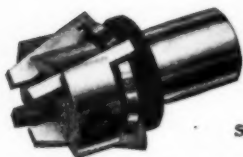
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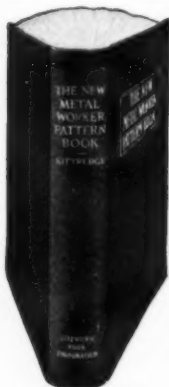
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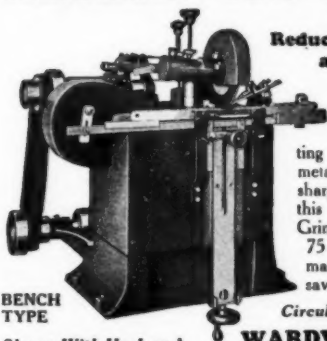
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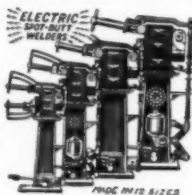
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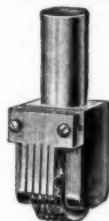
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Tannowitz Works, Grand Rapids, Mich.  
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Cincinnati-Bickford Tool Co., Cincinnati, O.  
Standard Electrical Tool Co., Cincinnati, O.

### Drilling Machines, Multiple Spindle

Cincinnati-Bickford Tool Co., Cincinnati, O.  
Foster-Burt Co., Cleveland, O.

## Classified Finding Index

### Drilling Machines, Portable Electric

Shilshaw, Inc., 3304 Elston Av., Chicago, Ill.  
Speedway Mfg. Co., 1822 So. 82nd Ave.,  
Chicago, Ill.  
Standard Electrical Tool Co., Cincinnati, O.  
Strand Co., N. A., 5001 N. Lincoln St., Chicago  
White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

### Drilling Machines, Radial

Cincinnati Bickford Tool Co., Cincinnati, O.

### Drilling Machines, Sensitive

Atlas Press Co., Kalamazoo, Mich.  
Buffalo Forge Company, Buffalo, N. Y.  
Burke Machine Tool Co., Cincinnati, Oh  
Foote-Hurt Co., Cleveland, O.

### Drilling Machines, Vertical

Atlas Press Co., Kalamazoo, Mich.  
Buffalo Forge Company, Buffalo, N. Y.  
Cincinnati Bickford Tool Co., Cincinnati, O.  
Foote-Hurt Co., Cleveland, O.

### Drives, Lathe

Cushman Wheel Co., 1359 Altgeld St., Chgo.  
Hardinge Brothers, Inc., Elmira, N. Y.

### Electric Blowers

Brewer Elect. Co., 848 Blackhawk St., Chgo.  
Clements Mfg. Co., 6550 Naragansett  
Chicago  
Standard Electrical Tool Co., Cincinnati, O.

### Electric Motors with Integral Brakes

Star Mchs. & Eng. Co., Bloomfield, N. J.

### Electrical Instruments

Illinois Testing Laboratories, Inc., 150 W.  
Austin Ave., Chicago

### Elevating Tables

Hamilton Tool Company, Hamilton, Ohio

### Emery Wheel Dressers and Cutters

Western Tool & Mfg. Co., Springfield, O.

### Emery Wheel Dressers, Diamond

Mendes Cutting Factories, Inc., 305 Fifth  
Ave., New York City

### End Mills

Progressive Tool & Cutter Co., Farmdale,  
Mich.  
Putnam Tool Co., Detroit, Mich.

### Engraving Machines

Geo. Gorton Machine Co., Racine, Wis.

### Etching Machines, Electric

Loma Electric Equipment Co., Toledo, Ohio

### Exhausters

Meyer Blower Co., Wm. W., 1045 W.  
Washington Blvd., Chicago

### Experimental Work

American Tool Works, Inc., Hartford, Conn.

### Fans

Meyer Blower Co., Wm. W., 1045 W.  
Washington St., Chicago

### Fasteners, Belt

Flexible Steel Lacing Co., 4870 Lexington  
St., Chicago, Ill.

### Feeder Tubes

Sutton Tool Co., Detroit, Mich.

### Feed Fingers for Auto. Screw Mchs.

Modern Collet & Machine Co., Ecorse, Mich.  
Sutton Tool Co., Detroit, Mich.

### Files

Grobet File Co., 3 Park Place, New York City  
Saw & Knife Specialty Co., Cleveland, Ohio

### Files, Rotary

White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

### Filing Machines

Oliver Instrument Co., Adrian, Mich.

### Filing Room Equipment

Wardwell Manufacturing Co., Cleveland, O.

### Flexible Shaft Accessories

Wyzenbeek & Staff, Inc., 642 Washington  
Bld., Chicago

### Flexible Shaft Machinery

Haskins Co., R. G., 6554 W. Fulton, Chgo.  
Fratt & Whitney Co., Hartford, Conn.  
Wyzenbeek & Staff, Inc., 642 Washington  
Bld., Chicago

### Floating Holders

Gairing Tool Co., Detroit, Mich.

### Furniture, Machine Shop

Western Tool & Mfg. Co., Springfield, O.

### Gages, Pin, Plug, Ring and Snap

American Tool Works, Inc., Hartford, Conn.

### Gages, Taper

Hartford Special Mch. Co., Hartford, Conn.

### Gears

Abart Gear & Machine Co., Cicero, Ill.  
Chicago Gear Works, 700 W. Jackson Blvd.,  
Chicago  
Massachusetts Gear & Tool Co., Woburn,  
Mass.  
Ohio Gear Co., Cleveland, Ohio  
Taylor Machine Co., Cleveland, Ohio

### Gear Motors

Star Mchs. & Eng. Co., Bloomfield, N. J.

### Generators

Chicago Electric Co., 1338 W. 22nd St.,  
Chicago, Ill.  
Star Mchs. & Eng. Co., Bloomfield, N. J.

### Grinders, Bench

Baldor Electric Co., St. Louis, Mo.  
Standard Electrical Tool Co., Cincinnati, O.

### Grinders, Disc

Wyzenbeek & Staff, Inc., 642 Washington  
Bld., Chicago

### Grinder, Electric

Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 So. Aberdeen St., Chicago, Ill.  
Dremel Manufacturing Co., Racine, Wis.  
Shilshaw, Inc., 3304 Elston Av., Chicago, Ill.  
Standard Electrical Tool Co., Cincinnati, O.

### Grinders, Electric Bench

Baldor Electric Co., St. Louis, Mo.  
Valley Electric Corp., St. Louis, Mo.

### Grinder, Flexible Shaft

Haskins Co., R. G., 6554 W. Fulton, Chgo  
Mail Tool Co., 7742 S. Chicago Ave., Chicago  
N. A. Strand & Co., 5001 N. Lincoln, Chgo.



# Classified Finding Index

## Grinder, Hand

Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Dremel Manufacturing Co., Racine, Wis.  
Skilaw, Inc., 3304 Elston Av., Chicago, Ill.  
Standard Electrical Tool Co., Cincinnati, O.

## Grinder, High Speed

Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Dremel Manufacturing Co., Racine, Wis.  
Mall Tool Co., 7742 S. Chicago Ave., Chicago

## Grinders, Electric, Motor-in-hand

Dremel Manufacturing Co., Racine, Wis.

## Grinders, Pedestal Electric

Ralder Electric Co., St. Louis, Mo.  
Standard Electrical Tool Co., Cincinnati, O.  
Valley Electric Corp., St. Louis, Mo.

## Grinders, Vertical, Angle Plate

Standard Electrical Tool Co., Cincinnati, O.

## Grinding Attachments, Drill

Carlson Mfg. Co., C. H., Minneapolis, Minn.  
Oliver Instrument Co., Adrian, Mich.

## Grinding Machines, Belt

Gallmeyer & Livingston Co., Grand Rapids,  
Mich.  
Production Machine Co., Greenfield, Mass.  
Standard Electrical Tool Co., Cincinnati, O.  
Walls Sales Corp., 96 Warren St., New York

## Grinding Machines, Cutler, Reamer and Tool

Gallmeyer & Livingston Co., Grand Rapids,  
Mich.  
National Machine Tool Co., Racine, Wis.  
Oliver Instrument Co., Adrian, Mich.

## Grinding Machines, External

Chicago Tool & Engr. Co., 8380 So. Chicago  
Ave., Chicago, Ill.  
Standard Electrical Tool Co., Cincinnati, O.  
Maxwell & Co., F. A., Bedford, Ohio

## Grinding Machines, Floor

Standard Electrical Tool Co., Cincinnati, O.

## Grinding Machines, Internal

Maxwell & Co., F. A., Bedford, Ohio  
National Machine Tool Co., Racine, Wis.  
Standard Electrical Tool Co., Cincinnati, O.

## Grinding Machines, Portable Electric

Chicago Tool & Engr. Co., 8380 So. Chicago  
Ave., Chicago, Ill.  
Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
B. J. Hashing Co., 4654 W. Fulton, Chicago  
Mall Tool Co., 7742 S. Chicago Ave., Chicago  
National Machine Tool Co., Racine, Wis.  
Pratt & Whitney Co., Hartford, Conn.  
Standard Electrical Tool Co., Cincinnati, O.  
Strand Co., N. A., 5001 N. Lincoln St., Chicago  
White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

## Grinding Machines, Pulley Finishing

Graham Manufacturing Co., Providence, R. I.

## Grinding Machines, Ring Wheel

Graham Manufacturing Co., Providence, R. I.  
Standard Elect. Tool Co., Cincinnati, Ohio

## Grinding Machines, Universal

Gallmeyer & Livingston Co., Grand Rapids,  
Mich.

## Grinding Wheels

Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.

## Grinding Wheel Dressers, Diamond

Mendes Cutting Factories, Inc., 505 Fifth  
Ave., New York City

## Grinding Wheels, Mounted

Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Dremel Mfg. Co., Racine, Wis.

## Grinding Wheels On Shanks

Chicago Wheel & Mfg. Co., M.C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.

## Hack Saw Blades

Armstrong-Blum Mfg. Co., 341 N. Francisco  
Ave., Chicago

## Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco  
Ave., Chicago

## Hammers, Mallets and Malls

Chicago Sawblade Mfg. Co., 1200 Elston Av.,  
Chicago, Ill.

## Hand Saws, Portable Electric

Skilaw, Inc., 3304 Elston Av., Chicago, Ill.

## Hand Screw Machines, Precision Bench Type

Hardinge Brothers, Inc., Elmira, N. Y.

## Heads, Boring

Flynn Manufacturing Co., Detroit, Mich.

## Hole Cutters

Wyzenbeek & Staff, Inc., 642 Washington  
Bld., Chicago

## Hollow Adjustable Mills

Gairing Tool Co., Detroit, Mich.  
Genesee Mfg. Co., Rochester, N. Y.  
Kutmore Tool Co., Rochester, N. Y.

## Index Centers

Wm. Carroll & Son, Norwood, Cincinnati, O.

## Jigs and Fixtures

American Tool Works, Inc., Hartford, Conn.  
Hamilton Tool Company, Hamilton, Ohio  
Hartford Special Mch. Co., Hartford, Conn.

## Keyseaters, Bench

South Side Machine Co., St. Louis, Mo.

## Keyseaters, Floor

South Side Machine Co., St. Louis, Mo.

## Knurls and Holders, for Turrets

Graham Manufacturing Co., Providence, R. I.

## Lacing, Belt

Flexible Steel Lacing Co., 4670 Lexington  
St., Chicago, Ill.

## Lamp Guards

Flexible Steel Lacing Co., 4670 Lexington  
St., Chicago, Ill.

## Lapping Compound

Timesaver Products Co., 23 So. Desplaines  
St., Chicago

## Lathe Centers

Rigid Tool Holder Co., Detroit, Mich.

## Lathe Chip Pans

Angle Steel Steel Co., Plainfield, Mich.

# Classified Finding Index

## Lathe Drives

Culman Wheel Co., 1339 Altgeld St., Chgo.  
Hardinge Brothers, Inc., Elmira, N. Y.

## Lathes, Bench

Atlas Press Co., Kalamazoo, Mich.  
Rivett Lathe & Grinder Inc., Brighton, Boston  
Sheldon Machine Co., 3235 Cottage Grove  
Ave., Chicago, Ill.  
South Bend Lathe Works, South Bend, Ind.

## Lathes, Back Geared

Rivett Lathe & Grinder, Inc., Brighton, Boston  
South Bend Lathe Works, South Bend, Ind.

## Lathes, Brake Drum

South Bend Lathe Works, South Bend, Ind.

## Lathes, Engine

South Bend Lathe Works, South Bend, Ind.

## Lathes, Gap Head

South Bend Lathe Works, South Bend, Ind.

## Lathes, Manufacturing

Sundstrand Machine Tool Co., Rockford, Ill.

## Lathes, Precision Bench

Hardinge Brothers, Inc., Elmira, N. Y.  
Wade Tool Co., Waltham, Mass.

## Lathes, Precision Bench Screw Cutting

Hardinge Brothers, Inc., Elmira, N. Y.

## Lathe Service Parts

Milliholland Sales Co., Indianapolis, Ind.

## Lathes, Screw Cutting

South Bend Lathe Works, South Bend, Ind.

## Lathes, Wood Turning

Delta Mfg. Co., Milwaukee, Wis.

## Leader Pins, Steel

Acme Industrial Co., 419 N. Carpenter St.,  
Chicago, Ill.

## Leather Belting, All Types

Chicago Rawhide Mfg. Co., 1200 Elston Ave.,  
Chicago, Ill.

## Leather Oil Retainers

Chicago Rawhide Mfg. Co., 1200 Elston Ave.,  
Chicago, Ill.

## Leather Pkg., Hydraulic & Pneumatic

Chicago Rawhide Mfg. Co., 1200 Elston Ave.,  
Chicago, Ill.

## Lubricator, Automatic

Noegren Co., C. A., Denver, Colo.

## Machine Knives

Saw & Knife Specialty Co., Cleveland, Ohio

## Machine Shop Lights

Chicago Die Casting Mfg. Co., 2568 West  
Monroe, Chicago, Ill.

## Machine Tender Stands

Angle Steel Stool Co., Plainville, Mich.

## Mandrels, Expanding

W. H. Nicholson & Co., Wilkes-Barre, Pa.  
Western Tool & Mfg. Co., Springfield, O.

## Micrometers

Bradley Machinery Co., Detroit, Mich.

## Milling Attachments

Burke Machine Tool Co., Conneaut, Ohio  
Wm. Carroll & Son, Norwood, Cincinnati, O.

## Milling Machines, Bench

Burke Machine Tool Co., Conneaut, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.

## Milling Machines, Precision Bench

Hardinge Brothers, Inc., Elmira, N. Y.

## Milling Machines, Hand

Burke Machine Tool Co., Conneaut, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.

## Milling Machines, Plain

Burke Machine Tool Co., Conneaut, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.

## Milling Machines, Universal

Geo. Gorton Machine Co., Racine, Wis.

## Milling Machines, Vertical

Geo. Gorton Machine Co., Racine, Wis.

## Mills, Adjustable Hollow

Genesee Mfg. Co., Rochester, N. Y.

## Motors

Chicago Electric Co., 1338 W. 22nd St.,  
Chicago, Ill.

## Motors, Small Universal

Dremel Manufacturing Co., Racine, Wis.

## Motor-Generator Sets

Chicago Electric Co., 1338 W. 22nd St.,  
Chicago, Ill.

## Motor Drives, Universal

Culman Wheel Co., 1339 Altgeld St., Chgo.  
Steege Mch. Co., 18 S. Clinton St., Chgo.

## Motors, Electric Ball Bearing

Valley Electric Corp., St. Louis, Mo.

## Moulds & Ladles, Hammer and Vise

Johnston Tool Co., East Providence, R. I.

## Nibbling Machines

National Machine Tool Co., Racine, Wis.

## Numbering Machines

Numberall Stamp & Tool Co., Staten Island,  
N. Y.

## Packing, Hydraulic

Chicago Rawhide Mfg. Co., 1200 Elston Ave.,  
Chicago, Ill.

## Pigeon Hole Sections

Angle Steel Stool Co., Plainville, Mich.

## Pins and Lacing for Belting

Chicago Rawhide Mfg. Co., 1200 Elston Ave.,  
Chicago, Ill.

## Pins, Leader And Dowel

Acme Industrial Co., 419 N. Carpenter St.,  
Chicago, Ill.  
Baumbach Mfg. Co., E. A., 1812 So. Kull-  
bourne Ave., Chicago

## Pipe Cutters

Ridge Tool Co., Elyria, Ohio

## Pipe Vises

Ridge Tool Co., Elyria, Ohio

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## Pipe Wrenches

Ridge Tool Co., Elyria, Ohio

## Point Thinning Machines

Oliver Instrument Co., Adrian, Mich.

## Press Brakes

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.

## Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.  
W. H. Nicholson & Co., Wilkes-Barre, Pa.  
Shelden Machine Co., 3205 Cottage Grove Ave., Chicago, Ill.  
Wilson, H. E., Buffalo, N. Y.

## Presses, Power

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.

## Presses, Punch

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.  
Lewthwaite Mch. Co., T.H., 311 E. 47th, N.Y.

## Production Tools

Genesco Mfg. Co., Rochester, N. Y.

## Profiling Machines

Geo. Gorton Machine Co., Racine, Wis.

## Pullers, Gear and Wheel

Armstrong-Bray & Co., 315 N. Sheldon St., Chicago, Ill.

## Punch Press Feeds

Wittak Mfg. Co., 4300 W. 24th Place, Chgo.

## Punch, Shear and Bender, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

## Punches, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago  
Buffalo Forge Company, Buffalo, N. Y.  
Lewthwaite Mch. Co., T. H., 311 E. 47th, New York  
Whitney Metal Tool Co., Rockford, Ill.

## Punches and Dies

Lewthwaite Mch. Co., T.H., 311 E. 47th, N.Y.

## Pusher Tubes

Modern Collet & Machine Co., Ecorse, Mich.

## Pyrometers

Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago  
Pyrometer Instrument Co., 102-106 Lafayette St., New York City

## Pyrometers, Optical

Pyrometer Instrument Co., 102-106 Lafayette St., New York City

## Pyrometers, Portable & Stationary

Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago, Ill.

## Pyrometers, Surface

Pyrometer Instrument Co., 102-106 Lafayette St., New York City

## Racks

Yoke Supply Co., Canton, Ohio

## Racks, Cut

Massachusetts Gear & Tool Co., Woburn, Mass.

## Reamer Holders

W. H. Nicholson & Co., Wilkes-Barre, Pa.

## Riveters, Multiple Spindle

Grant Mfg. & Mch. Co., Bridgeport, Conn.

## Riveters, Pneumatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.

## Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

## Roll Cutters

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago  
Lewthwaite Mch. Co., T.H., 311 E. 47th, N.Y.

## Router Bits

Futnan Tool Co., Detroit, Mich.

## Sanders

Sterling Products Co., Detroit, Mich.

## Saws, Band and Circular for Metal

Saw & Knife Specialty Co., Cleveland, Ohio

## Saw Sharpening Machines

Wardwell Manufacturing Co., Cleveland, O.

## Screw Drivers, Electric

Haskins Co., E. G., 4854 W. Fulton, Chgo.

## Screw Machine Parts

Modern Collet & Machine Co., Ecorse, Mich.

## Set-Up Appliances

Standard Shop Equipment Co., Inc., Phila.

## Shafts, Flexible

R. G. Haskins Co., 4654 W. Fulton, Chicago  
Pratt & Whitney Co., Hartford, Conn.  
Strand Co., N. A., 603 N. Lincoln St., Chgo.  
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

## Shaping Machines

Osborne & Sexton Machy. Co., Colam

## Shear Blades

Saw & Knife Specialty Co., Cleveland, Ohio

## Shears, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago  
Beverly Throatless Shear Co., 3007 W. 110th Place, Chicago, Ill.  
Lewthwaite Machine Co., T.H., 311 E. 47th St., New York  
Whitney Metal Tool Co., Rockford, Ill.

## Shear, Power

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.

## Shears, Slitting

Beverly Throatless Shear Co., 3007 W. 110th Place, Chicago, Ill.  
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.  
National Machine Tool Co., Racine, Wis.

## Shears, Throatless

Beverly Throatless Shear Co., 3007 W. 110th Place, Chicago, Ill.

## Speed Saws, Universal

Wysenbeck & Staff, Inc., 642 Washington Blvd., Chicago

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## Shop Spotlights

Chicago Die Casting Mfg. Co., 3502 West  
Monroe, Chicago, Ill.

## Special Tools and Machinery

American Tool Works, Inc., Hartford, Conn.

## Speed Reducers

Abart Gear & Machine Co., Chicago, Ill.  
Chicago Gear Works, 769 W. Jackson Blvd.,  
Chicago  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Ohio Gear Co., Cleveland, Ohio

## Spools & Nuts for Auto. Screw Mchs.

Sutton Tool Co., Detroit, Mich.

## Spot Welding Machines, Speed.

Rider Engineering Co., Inc., Newark, N. J.  
Pier Equip. Mfg. Co., Benton Harbor, Mich.  
Taylor-Winfield Corp., Warren, Ohio

## Sprockets

Chicago Gear Works, 769 W. Jackson Blvd.,  
Chicago  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Massachusetts Gear & Tool Co., Woburn,  
Mass.  
Ohio Gear Co., Cleveland, Ohio

## Stampings

Gerding Brothers, Cincinnati, Ohio

## Stools and Chairs

Angle Steel Stool Co., Plainville, Mich.

## Straightening Machines

Whitney Metal Tool Co., Rockford, Ill.

## Tables

Angle Steel Stool Co., Plainville, Mich.

## Tap Extractors

Walton Co., Hartford, Conn.

## Tap Holders

Proconier Safety Chuck Co., 14 S. Clinton  
St., Chicago

## Tapping Attachments

Proconier Safety Chuck Co., 14 S. Clinton  
St., Chicago, Ill.

## Tapping Jigs, Universal

Heuser Mfg. Co., 1636 No. Paulina St.,  
Chicago, Ill.

## Tapping Machines and Attachments

Burke Machine Tool Co., Connecticut, Ohio  
Clemons Mch. Tool Co., Green Bay, Wis.  
Proconier Safety Chuck Co., 14 S. Clinton  
St., Chicago, Ill.  
Whitney Metal Tool Co., Rockford, Ill.

## Thermometers, Resistance Type

Illinois Testing Laboratories, Inc., 186 West  
Austin Ave., Chicago, Ill.

## Thread Dies

J. M. Colven, Yonkers, N. Y.

## Threading Machines, Automatic, Stud

Grant Mfg. & Mch. Co. Bridgeport, Conn.

## Threading Tools

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago  
Hodge Tool Co., Wylie, Ohio.  
Rivett Lathes & Grinder Inc., Brighton, Boston

## Tool Holders

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago  
Rigid Toolholder Co., Detroit, Mich.  
Western Tool & Mfg. Co., Springfield, O.

## Tool Salvage

Renu Tool Co., Detroit, Mich.

## Tools, Abrasive

White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

## Tools, Boring

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago  
Gairing Tool Co., Detroit, Mich.

## Tool Grinding

Machinist's Tool Grinding Co., 3038 W.  
Van Buren St., Chicago

## Tools, Lathes and Planer

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago

## Tools, Machinists'

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago

## Tools, Multi-Diameter

Gairing Tool Co., Detroit, Mich.

## Tube Flanging Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

## Trucks

Angle Steel Stool Co., Plainville, Mich.

## Turret Lathes

Milbolland Sales Co., Indianapolis, Ind.

## Turret Lathes Tools

Milbolland Sales Co., Indianapolis, Ind.

## Universal Drill Jigs

Heuser Mfg. Co., 1636 No. Paulina St.,  
Chicago, Ill.

## Universal Joints

American Tool Works, Inc., Hartford, Conn.  
Chicago Gear Works, 769 W. Jackson Blvd.,  
Chicago

## Used and Rebuilt Machinery

Aaron Mch. Co., 176 Lafayette St., N. Y. C.  
Adams Mch. Co., 124 S. Clinton St., Chgo.  
Alamo Engine Co., Hollandale, Mich.  
American Machinery Co., Cleveland, Ohio  
Atlas Equipment Co., 114 S. Clinton, Chgo.  
Barad Tool & Sup. Co., 174 Lafayette, N. Y. C.  
Beal & Co., Jos., Boston, Mass.  
Beiyon Co., Inc., 160 W. 18th St., New York,  
N. Y.  
Bernstein & Co., Geo. M., 128 S. Clinton, Chgo.  
Blaser Mfg. & Mch. Co., Springfield, Ill.  
Bradley Machinery Co., Detroit, Mich.  
Brown Machinery Co., St. Louis, Mo.  
Brownell Machinery Co., Providence, R. I.  
Certified Liquidators, Inc., 136 Liberty, N. Y. C.  
Chandler Machinery Co., Atlanta, Ga.  
Cincinnati Mch. & Supply Co., Cincinnati, O.  
Clinton Mch. Co., 32 S. Clinton St., Chgo.  
Davis Machinery Co., Toledo, Ohio.  
Denny, W. I., 518 W. Lake St., Chicago  
Eastern Machinery Co., Cincinnati, O.  
Emerson, Louis E. & Co., 1761 Elston  
Emley Machinery Co., E. I., 835 Race St.,  
Chicago, Ill.  
Ford Machinery Sales Co., Ford City, Pa.

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## Used and Rebuilt Machinery—Cont.

George, James W., Detroit, Mich.  
Goldman, Harvey H., Detroit, Mich.  
Grand Machinery Exchange, 140 Centre St.,  
New York, N. Y.  
Harben Machinery Equipment Co., 80 S.  
Clinton St., Chicago, Ill.  
Hess-Schenck Co., Cleveland, Ohio  
Hill, Clarke & Co., 645 W. Washington Blvd.,  
Chicago, Ill.  
Indianapolis Machinery & Supply Company,  
Indianapolis, Ind.  
International Machinery Co., Detroit, Mich.  
Interstate Mch. Co., 130 S. Clinton, Chgo.  
Iroquois Machinery Co., Buffalo, N. Y.  
Johnson & Sons Machinery Co., Wm. C.,  
St. Louis, Mo.  
Johnstone Mch. Ex., Toledo, Ohio  
Jones Machine Tool Co., Cincinnati, Ohio  
Kennard-Rafkin Mehry, Corp., 100 Liberty  
St., New York, N. Y.  
Klauber Mch. Co., E. L., St. Louis, Mo.  
Lake Machinery Co., 954 W. Lake St.,  
Chicago, Ill.  
John, Inc., Wm. J., 6 Howard St., N. Y. C.  
Lucas, J. L., Bridgeport, Conn.  
McDonald Machinery Co., St. Louis  
Marr-Gallbreath Mch. Co., Pittsburgh, Pa.  
Midwest Equipment Co., 625 W. Lake St.,  
Chicago, Ill.  
Milas Machinery Co., Saginaw, W. S. Mich.  
Molitor Machinery Co., Charles L., 120 S.  
Clinton St., Chicago, Ill.  
Moray & Co., 45 Mill St., Astoria, Long  
Island, N. Y.  
Morrin Machinery Co., Newark, N. J.  
Noble Mch. Co., Fort Wayne, Ind.  
Norton-Broadway Machinery Co., Cincinnati,  
Ohio  
O'Brien Machinery Co., Philadelphia  
Ohio Gear Co., The, Cleveland, O.  
Ohio Mch. & Supply Co., Cincinnati, Ohio  
Ott Machinery Sales Co., Detroit, Mich.  
Osborne & Sexton Mch. Co., Columbus, O.  
Relliance Machinery Sales Co., Pittsburgh,  
Pa.  
Riverside Machinery Depot, Detroit, Mich.  
Rosenkrantz & Weisbecker, 2309 A. Singer  
Bldg., New York City  
Russell Machine Co., Pittsburgh, Pa.  
Scott-Sansbach Mch. Co., 4607 W. 20th St.,  
Chicago  
Scully Jones & Co., 1901 S. Rockwell St.,  
Chicago, Ill.  
Segal Machinery Co., 809 W. Lake St.,  
Chicago, Ill.  
Simmons Machine Tool Corp., Albany, N. Y.  
Stockman, John A., Honesdale, Pa.  
Strong, Carlisle & Hammond Co., Cleveland,  
Sun Machinery Co., 28 Van Buren Street,  
Newark, N. J.  
Surplus Material & Mch. Co., Detroit, Mich.  
Surplus Stock & Machinery Co., 1133 W.  
Lake St., Chicago, Ill.  
Thompson, B. A., Fort Wayne, Ind.  
United Mehry & Supply Co., St. Louis, Mo.  
Victor Machinery Co., 128 S. Clinton Street,  
Chicago, Ill.  
Victor Machinery Exchange, 251 Center St.,  
New York City  
Vine, R. A., Detroit, Mich.  
Waters Mch. Co., C. H., Elkhart, Ind.  
Weber, H. J., Riverside, Ill.  
West Penn Machinery Co., Pittsburgh, Pa.  
White Mch. Co., A. D., 108 N. Jefferson  
St., Chicago  
Wiener Mch. Co., Inc., 237 Centre St.,  
New York City  
Winglesworth Mch. Co., Cambridge, Mass.  
Wolnich Machinery Sales, 21st & Marshal  
Hvld., Chicago, Ill.

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Nicholson & Co., W. H., Wilkes-Barre, Pa.

## Vises, Drilling Machine

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Armstrong Bros. Tool Co., 308 N. Francisco  
Av., Chicago  
Graham Manufacturing Co., Providence, R. I.  
Houser Mfg. Co., 1636 No. Paulina St.,  
Chicago, Ill.  
L-W Chuck Co., Toledo, Ohio  
Martin Tool & Die Works, J. E., Springfield, O.  
National Machine Tool Co., Racine, Wis.  
Sampson Tool Co., Inc., 101 Walker St.,  
New York, N. Y.  
Sheldon Machine Co., 3255 Cottage Grove  
Ave., Chicago, Ill.

## Vises, Drill

Johnson Tool Co., East Providence, R. I.

## Vises, Machinists'

Chicago Tool & Engr. Co., 3380 So. Chicago  
Ave., Chicago, Ill.  
L-W Chuck Co., Toledo, Ohio  
Sheldon Machine Co., 3255 Cottage Grove  
Ave., Chicago, Ill.  
Western Tool & Mfg. Co., Springfield, O.

## Vises, Milling Machine

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Hartford Special Mch. Co., Hartford, Conn.  
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Graham Manufacturing Co., Providence, R. I.  
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## Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

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Compressor, Laidwell-Dunn 8"x8" horizontal.	Punch & shr., arc jaws, 18" thrt., 1" cap.
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We have over 1000 machines. Send for complete stock list.	

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<b>United Machinery &amp; Supply Co.,</b>	<b>1241 Walton Ave., St. Louis, Mo.</b>
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<b>Brownell Machinery Co.,</b>	<b>150 Pine St., Providence, R. I.</b>
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Lathe, 60"x30' Pond.	Miller, No. 2 B. & S., plain.
Lathe, 32"x28' New Haven.	Planer, 24"x24"x8' Whitcomb.
Miller, No. 3 Hendey universal.	Shaper, 20" Gould & E., back grd.

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Boring mill, Cleveland 24" bar.	Miller, No. 2-B Brown & Sharpe.
Grinder, No. 2 Cincinnati, centerless.	Millers, No. 4 hor. & vert. Cincinnati.
Hammer, No. 6B Nazel.	Miller, 5B heavy B. & S., rap. trav.
Lathe, 26"x11' Greaves & K. grd. hd.	Nibbler, Gray 3/16"-34" throat.

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Boring mills, Barrett 5" bar horiz.  
Boring mill, Niles 36" vert., 2 hds.  
Boring mill, Gisholt 42" vert. m. d.  
Boring mills, Baush 42" vert., m. d.  
Brake, Ohi 10' No. 10 ga. m. d. press.  
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Gear cutter, G. & E. 36" s. p. d.  
Gear cutter, G. & E. 60" m. d.  
Gear hobber, G. & E. 24".  
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Grinder, B. & S. Nos. 10 & 16 plain.  
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grd. hd.; Hendey 14"x6", q. c. g.;  
50 others in stock.  
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Cincinnati No. 3-S pl., s. p. d.  
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No. 66-D d. c. Ohi d. c. grd.  
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American, Steptoe, Queen City,  
12", 16", 18", 20", 24" and 26"; S.  
M. 28", s. p. d.; Cin. 24" m. d. g. b.:  
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Turret lathes, Libby 18" gearrd  
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H. P.	TYPE	SPEED
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1-300	Cr. Wh.	200/400
1-250	El. Dy.	300/900
3-120	G. E.	300/750
1-100	West.	365/600
3-80	Diehl	500/1100
1-60	G. E.	400/1050
2-50	West.	225/600
1-40	West.	300/900
1-35	West.	500/1500
1-35	Cr. Wh.	800/1600
1-25	West.	400/1200
3-25	West.	650/2200
1-20	West.	650/1300
2-20	West.	375/1500
20-20	G. E.	850/1950
1-20	West.	500/1500
1-20	G. E.	800/1500
2-15	El. Dy.	300/900
1-15	West.	600/1200
6-15	West.	400/1600
1-10/14	El. Dy.	300/1200
30-10	West.	500/1500
20-10	G. E.	600/1800

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conn. to 710 h. p., 8 p. f. Synch.  
Motor, 4600/2300 v. 1200 r. p. m.,  
3 ph., 90 cy.  
500 k. w. G. E., D. C. Gen. 250/275 v.  
comp'd. inter pole, 720 r. p. m.,  
coupled to 700 h. p. G. E. Type  
ATL Synch. Motor, 3 ph., 60 cy.,  
720 r. p. m., 2200/440 v.

### 150 W. 18th St., New York, N. Y.

300 k. w. West. 600 V., D. C. Gen.,  
conn. to 433 h. p. synch. motor  
4600/2300 v., 3 ph., 60 cy., 1200  
r. p. m.  
175 k. w. G. E., D. C. Gen. 275 v.  
comp'd inter pole, dir. conn. to 280  
h. p. G. E. Synch. Motor, 2300/440  
v., 3 ph., 60 cy., 720 r. p. m.

#### A. C. MOTORS

H. P.	TYPE	VOLTS	SPEED
1-2850	G. E.	2300/4150	450
1-675	Al. Ch.	2200/550	900
1-600	G. E.	2200/550	257
1-260	Al. Ch.	2200/440	720
1-125	West.	2300	900
1-50	G. E.	440/220	1200
1-35	G. E.	440/220	1200

#### SLIP RING

1-1200	West.	2200	360
1-600	G. E.	2300/550	257
1-600	G. E.	2300/440	705
1-450/360	West.	2200	875/700
1-400	West.	2300	514
1-400	West.	550	505
1-300	G. E.	550	575
1-250	F. Morse	2200	1200
1-250	West.	2300/440	700
2-200	West.	220/440	900
1-200	G. E.	220/440	900
1-150	G. E.	440	1750

#### SQUIRREL CAGE TYPE

1-300	Cr. Wh.	2300/220	580
1-250	West.	2300/440	580
1-180	G. E.	220/440	900
1-150	West.	220/440	720
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Bor. mills, 24" & 42" Bullard New Era  
Bor. mill, 36" Bullard, side hd., s. p. d.  
Boring mill, 42", 2 heads, Bullard.  
Boring mill, 48" Gisholt r. p. t., 2 hds.  
Boring mill, 62" Betts, 2 heads, b. d.  
Bor. mill, 76" Bullard, 2 hds., b. d.  
Bor. mill, 84" Betts, 2 heads, m. d.  
Boring mill, 24" bar Cleveland, s. p. d.  
Bor. mill., hor. No. 3 Rochester, 34"  
Bor. mill, hor. 4" bar Sellers, fl. type  
Bor. mill, Niles floor type, 4" bar.  
Brake, 7' x10 ga. Dreis & K., m. d.  
Brakes, 3' x3/16" D. & K., m. d.  
Bulldozers, Nos. 2, 4, 6, 9, 20, & 30.  
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Drill, 2 spindle Avey, b. b., m. d.  
Drill, sens. 4-spdl. Avey, belt drive.  
Drill, 4-sp. Colburn, table 20x72.  
Drill, mult. 12 sp. Pratt & W., b. d.  
Drill, hvy. duty, D-6, 36" Colburn.  
Drills, radial, 24", 4" & 6" Fosdick.  
Drill, radial, 6" Dreses, s. p. d.  
Drill, radial, 4" Prentice, t. a., b. d.  
Drills, upright 10" to 36".  
Drill, upright, 26" Superior, b. d.  
Drill, Baker, table 23 1/2" x17", s. p. d.  
Drill, upright, No. 153 Baker, No. 6  
m. t., motor drive.  
Engine, gas, horiz., 20h. p. Bessemer.  
Flanger, McCabe, 1/2" capacity, dies.  
Forging mch. 14" Acme, st. fr. b. d.  
Gear cutters, 11", 18" & 24" Gleason.  
Gear cutter, spur, 36" x10" Newark.  
Grinder, disc, No. 6-18-1 Besly, m. d.  
Grinder, nail die, No. 101 Bridg., m. d.  
Grinders, surf., rotary 8" Heald.  
Grinder, No. 2 B. & S., surf. b. d.  
Grinder, sur. 14" Pratt & W., m. d.  
Grinder, surf. 42" Spring., tbl. 18x84".  
Grinder, surf. 94" Diamond, m. d.  
Grinder, univ. No. 3 Landis, 12x40".  
Hammer, Blacker, power, 35-lbs.  
Hammer, power, 90-lb. Justice, b. d.  
Hammers, No. 3-B Nazel.  
Hammers, steam, 600 lb. to 6000 lbs.  
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Lathe, 16"x8" L. & S. q. c. g., b. d.  
Lathe, 24"x10" Reed, q. c. g., b. d.  
Lathe, 24"x12" American, q. c. g., b. d.  
Lathe, 24"x12" L. & S. q. c. g., t. a. b. d.  
Lathe, 24"x16" Bridgeford, g. hd. m. d.  
Lathe, 30"x18" LeBl. g. h. g. c. g., m. d.  
Lathe, 32"x16" Pond, t. g., b. d.  
Lathe, 36"x16" L. & S. grd. hd., s. p. d.  
Lathe, 36"x18" Putnam, l. c. g., t. a. b. d.  
Lathe, 38"x17" Pond, t. g., b. g.  
Lathe, gun boring 49"x82", m. d.  
Lathe, tur. No. 2-B Foster univ. m. d.  
Lathe, turret, No. 6 Warner & S.  
Lathe, turret, 19" Libby, m. d.  
Lathe, turret, 24" Steinle, 6 1/2" hole.

Lathe, spinning, 32"x6" Bliss, b. d.  
Miller, pl. No. 2 Kempsmith, b. d.  
Millers, pl. Nos. 2A, 2B & 3B Milw.  
Miller, pl., No. 24 B. & S. tbl. 17"x72"  
Miller, pl., No. 28 Ohio, tbl. 52x11 1/2"  
Miller, univ. No. 3 Kemp-smith, b. d.  
Miller, slab, 48"x40"x10" Ingersoll.  
Millers, vert. Nos. 4-B & 5-C Becker.  
Nut tapper, Acme, 10-spdl 1 1/2", a. auto.  
Pipe machines, 6" Oster.  
Pipe mches., 6", 8" & 12" Williams.  
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Planer, 48"x48"x10" N.-B.-P. 4 hds.  
Pl., 56"x48"x12" Det. & H., rev. m. d.  
Planer, 60"x60"x12" Sellers, 3 hds.,  
Planer, 96"x96"x33 1/4" hds. rev. m. d.  
Press, arbor, No. 17 Green., 18-ton.  
Press, No. 3 Bliss, Stiles type.  
Press, cam. No. 69N Bliss, dbl act. inc.  
Press, o. b. i. Bliss, Nos. 18, 19, 20.  
Presses, Nos. 4 & 5 Nia., 2 & 2 1/2" st.  
Press, No. 55 Toledo 20"x19", 2 1/2" st.  
Press, No. 64 Cons., 17"x17", str. 4 1/2".  
Press, No. 57 Toledo, 32"x32", str. 6".  
Press, dbl. crank No. 5 Bliss, 2" str.  
Press, screw, No. 57 Niagara.  
Press, hand screw, No. 192 Tol. dbl.  
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Press, forging, United 1000 ton hyd.  
Press, wheel, 300-ton, motor drive.  
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Saw, cold, No. 6 Coch.-Bly, s. p. d.  
Saw, hack, Racine 9"x9", m. d.  
Shaper, vert., Jones 10" stroke, m. d.  
Shaper, 20" N.-B.-P. trav. bd., m. d.  
Shaper, 16" Steptoe, b. d.  
Shapers, 16", 20", 24" & 36" G. & E.  
Shear, angle, 6"x6"x1" H. & J.  
Shears, alligator, 1 1/2", 2", 3" & 4".  
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Shear, bevel, Lennox 8", b. d.  
Shear, cir. & flan. No. 208A Nia.  
Shear, guil. No. 5 H. & J. 4" sq., m. d.  
Shear, sq. 8"x14 ga., Geo. A. Ohl, b. d.  
Shear, sq. 10"x18 ga., Niagara, m. d.  
Shear, sq., 12"x14 ga., Peerless, b. d.  
Shear, 12"x1" Wheeling, 31" gap.  
Shear, 16"x1" L. & A., 20" gap m. d.  
Shear, slit., O. E. cap. 4", 14" blade.  
Shear, Pels, BLUEFG-20. 13/16"-4".  
Sheet metal cut., No. 1 & 1-A Gray.  
Slotter, 6" Newton, 21" table, m. d.  
Slotter, 36" Bement, crank: 15" Dill.  
Straightener, 2-A Kane & R. 20-roll.  
Straightener, 1 1/2", 4" rd. Abramson.  
Welder, spot, 40 k. w. Thom. 2 pcs. 4"

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**Segal Machinery Co.,**

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Boring mill, 50" Niles vert., 2 hds.  
Castellating mch., No. 1 Craftsman.  
Drill, 4" Bickford, s. p. d., gear box.  
Grinder, No. 60 Heald internal, cyl.  
Lathe, 16x6 Advance, quick ch. gear.  
48x48x12 Cincinnati hydro planer, 4 heads, motor driven, reversing equip.

Lathe, 26x14 Bridgeport, tap, att.  
Miller, 20x7x17 Osterlein, univ.  
Miller, No. 1 1/2 Cincinnati, plain.  
Planer, 24"x24"x6" Bement, b. d.  
Screw mche., No. 4 W. & S., g. f. h.

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**Wm. C. Johnson & Sons Machinery Co.,**

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#### BORING AND TURNING MILLS.

36" Gisholt, turret head.  
60" Colburn, 2 heads.  
10"-16" Niles, motor driven.

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1 1/2" Landis.  
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24"x5" Springfield surface.  
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16"x7" Pratt & Whitney, grd. head.  
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### FOR SALE BY

**The Jones Machine Tool Co.,**

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2 1/2" bar Cleveland horizontal.  
36" Bullard with side head.  
36" Bullard vertical, 2 head.  
51" Niles vertical, s. p. drive.  
72" Wais & King vertical, 2 heads.

#### GRINDERS

No. 2 Brown & Sharpe surface.  
No. 60 and No. 70 Heald.  
No. 1 Diamond surface.  
Double disc grinders—all sizes.

#### LATHES

18"x6" L. & S. sel. geared head.  
18"x10" L. & S. sel. grd. head, (3).  
19"x10" LeBlond, 3 st. cone, d. b. g.  
24"x12" Lodge & Shipley, q. c.  
32"x12" Boye & E., cone head q. c.  
30"x16" Lodge & Shipley, q. c.  
26"x16" Lodge & S., q. c., m. d.  
42"x32"—American, grd. hd., m. d.

#### PRESSES

50 O. B. I. presses—all sizes.  
No. 4 & 5 Cons. & R. & K. (6).  
No. 57 Toledo 18" bet. housing.  
No. 3 L. & J. b. g. 5" stroke.

#### WELDERS

150 & 200 amp. Lincoln arc, m. d.

20 k. w. National spot.

#### MILLING MACHINES

No. 2 Cincinnati univ. s. p. drive.  
No. 3 Milwaukee plain dbl. overarm.  
No. 34 Osterlein plain cone drive.  
Nos. 3 & 4 Cincinnati plain s. p. dr.  
No. 6 Becker vertical, rotary table.

#### HACK SAWS

2-8x8 Atkins, motor drive.  
3-6x6 Racine, s. p. drive.  
2-12x15 Racine belt drive.  
1-6x6 Marvel, automatic feed.

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Circle shear, No. 388 Toledo 1/2" cap.  
Brake, 10" Bertsch press brake, 3/16  
Brakes, 8", Chicago power 3/16".  
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Gear cutters, Nos. 3, 4 B. & S.  
Keyseater, No. 2 Davis.  
Press, 30 ton Lucas forcing.  
Radial drills, 3" Bickford, s. p. dr.  
Radial drill, 4" Mueller, s. p. d.  
Straightening rolls, 54" H. & J.  
Shaper, 32" Cincinnati, cone drive.  
Shapers, 16", 20", 24" and 32".  
Square shears, 84" Kutachid f. p.  
Tampers, No. 1 & 2X Garvin.

**JONES-BUYS-SELLS-TRADES-WRITE US**

# USED AND REBUILT MACHINERY

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**Marr-Galbreath Machinery Co.,**

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Quality Not Reflected in These Low Prices.

Air comp., 17"x10" Ing.-R., 45 lbs.  
 Air comp., 12"x10" Bury, belted.  
 Air compressor, 5"x5" Ing.-R., m.d.  
 Air compressor, 6"x6" Worth, vert.  
 Bender & straightner, No. 4 H. & J.  
 Blower, 4E Buffalo 1/60/220.  
 Blower, No. 3 Root, 2500 c. f. m.,  
 12" outlet, 16 oz. pressure.  
 Bolt threader 4" Geometric b. or m.d.  
 Bolt threader, 3 1/2" Landis dbl., m. d.  
 Boring mill, 36" 44" N-B-P., sh. m. d.  
 Boring mill, 30" Bullard V T L,  
 threading attachment.  
 Boring mill, floor, 6" bar N. B. P.,  
 230 v. d. c., 2 column.  
 Brake, press 12"x10 ga. Ohl, m. d.  
 Bulldozer, No. 6 W-W., clutch, b. d.  
 Crusher, Allis-Chalmers, 9x9", 2-roll,  
 belt drive.  
 Die sinker, No. 3 P. & W., r. t.  
 Driller, 5, 6-sp. Detroit, chucks.  
 Drill, 6, 6 spdl. L-G., b. b., m. d.  
 Drill, radial, 3 1/2" Cin-Bick. t. a., m. d.  
 Gear cutter, 18" Newark, (cheap).  
 Generator, 125 k. v. a. 3/60/220/900.  
 Generator, 50 k. v. a. 3/60/220/1200.  
 Grinder, face 34"-30" wheel, mag.  
 chuck, m. d.  
 Grinder, 7th. p. U.S. dbl. end, 3/60/440  
 Grinder, parallel, U. S. 3 h. p., 220  
 v. d. c.  
 Grinder, surf., No. 2 B. & S., m. d.,  
 magnetic chuck.  
 Grinder, flex. shaft motor 1/2" h. p. 1/60.  
 Grinder, pl. 11 B. & S. 4x30" (cheap).  
 Hack saw, 6"x6" Marvel, belted.  
 Hammer, 800 lb. Erie SIF steam or air.  
 Hammer, Syntron Elec., 1/60/110/  
 Hammer, No. 2B Nazel, motor dr.  
 Hammer, 400 lb. Bliss board drop, b. d.  
 Hoist, 2-ton Sprague Elec., 3/60/220  
 volt motor.  
 Hoist, chain, 4-ton triplex. Y. & F.  
 Jewelers screw press, King, bench.  
 Joiner, bench, 4" Wallace, 1/2 h. p. mtr.  
 Keyseater, No. 4 Burr, cap. 4 1/2"x18"  
 for m. d.  
 Lathe, g. h., 18"x8" Am. p. b., t. a., m. d.  
 Lathe, 12"x5" Hendey, g. h., ta  
 Lathe, 16"x6" L. & S., g. h., t. a., m. d.  
 Lathe, 18"x8" Hendey, tie bar, ta.  
 Lathe, 11" Sundstrand, g. h., s. p. d.  
 Lathe, 24"x16" LeBlond, 6" raising  
 blocks, chuck.  
 Lathe, 24"x14" Hendey, q. c. g., tie-b.  
 Lathe, 12"x8" R. P., g. h., s. p. d.  
 Lathe, 12"x8" So. Bend, pl. ch gears.

Lathe, 18"x8" L. & S., q. c. g., t. a.  
 Lathe, turret, No. 4 W. & S., bar  
 feed, m. d. (2).  
 Lathe, 32"x14" Bridgeford g. h., m. d.  
 Lathe, 20"x8" Hendey, tie bar.  
 Lathe, 14"x19" Fay automatic.  
 Miller, hand, No. 1 N. S. (2).  
 Miller, plain 1-y B. & S., rack feed.  
 Miller, 18" Cin. Mfg., motor 3/60.  
 Miller, No. 4 Ohio table 101".  
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 Planer, 30"x30"x10" Liberty, 2-h. m. d.  
 Planer, 45"x45"x10" Gray, 3-hds., b. d.  
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 Press, 30-ton Lourie hydraulic.  
 Press, Arch, No. 3A Mossberg dial,  
 feed, 12 positions.  
 Press, D.C. No. 138A Stoll, 3" stroke.  
 Press, horn, 42-h. p. Toledo.  
 Press, trimming 58 1/2" Toledo d. b. g..  
 10" stroke, friction clutch, m. d.  
 Presses, o. b. i., 18, 19 Bliss.  
 Press, No. 83 Bliss redu., bg., 10" str  
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 m. d., rapid ac., 10" st., bed 24x16".  
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 Rolls, bend., 10"x3" H. & J., d. e., m. d.  
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No. 4 Warner & Swasey, friction head, power feed to cross slide.  
18x8 Hendey, taper attach., cone.

8-ton General flexible press, m. d.  
75 k. w. Federal butt welder, 440 v.  
10" Pratt & W. vertical slotter, m. d.  
No. 0 Baker keyseater, m. d.  
15" Gleason spiral finishers.  
Cleveland model N, 1" to 1-1/16", 4 spindle with magazine fd., m. d.  
1½ Canton alligator shear.  
13' ½ cap. Bertsch plate shear, m. d.

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Smith & Post Cold Saw.

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- 3<sup>rd</sup> Defiance No. 5, s. p. d.
- 3 1/2<sup>nd</sup> bar Detrick & H. floor type.
- 36<sup>th</sup> Bullard Vertical Turret, motor dr.
- 42<sup>nd</sup> Gisholt, Bullard, & Niles, P. R. T.
- 48<sup>th</sup> Colburn 2 heads P. R. T., m. d.
- 54<sup>th</sup> Bullard, Rapid Pro., P. R. T.
- 76<sup>th</sup> Bullard, Self Cont., 2 heads
- 10<sup>th</sup> Niles, heavy, motor drive.

## Drills

- 6<sup>th</sup> Amer. Tri. Purp plain rad., m. d.
- 6<sup>th</sup> N. B. P. right line radial, s. c. m. d.
- 5<sup>th</sup>, 3 1/2<sup>th</sup> & 3<sup>rd</sup> Cinci. Bickford, s. p. d.
- 4<sup>th</sup> & 3<sup>rd</sup> Amer. Tri. Grd., s. p. d. (3).
- 4<sup>th</sup> Cincinnati-Bickford Motor on Arm.
- 2 1/2<sup>nd</sup> Fordick, s. p. d.
- 1 & 2 Spin. Avey & Aveymatica.
- 1, 2, 3, 4 spindle High Speed. Allen and Leland & Gifford, Henry & W.
- 12 Spin. P. & W. No. 12, P. F.

## Lathes

- 12<sup>th</sup> x 6<sup>th</sup> Seneca Falls, q. c. g., Cone.
- 14<sup>th</sup> x 6<sup>th</sup> Hendey, T. A. Cone.
- 14<sup>th</sup> x 6<sup>th</sup> Rockford, T. A. Draw In.
- 16<sup>th</sup> x 6<sup>th</sup> American, gd. hd., motor dr.
- 16<sup>th</sup> x 8<sup>th</sup>, 18<sup>th</sup> x 8<sup>th</sup>, 20<sup>th</sup> x 8<sup>th</sup> American q. c. g., Cone.
- 18<sup>th</sup> x 8<sup>th</sup>, 20<sup>th</sup> x 8<sup>th</sup> L. & S. Cone q. c. g.
- 18<sup>th</sup> x 8<sup>th</sup> Reed Prentice grd. hd., m. d.
- 19<sup>th</sup> x 10<sup>th</sup> LeBlond, t. a., Cone.
- 21<sup>st</sup> x 12<sup>th</sup> LeBlond, grd. hd., s. p. d.
- 26<sup>th</sup> x 14<sup>th</sup> Pond, q. c. g., t. a., Cone.
- 33<sup>rd</sup> x 12<sup>th</sup> L. & S., q. c. g., Cone.
- 36<sup>th</sup> x 19<sup>th</sup> N. B. P. A. C., grd. hd.
- 36<sup>th</sup> x 28<sup>th</sup> Putnam geared hd., q. c. g.
- 36<sup>th</sup> x 32<sup>nd</sup> LeBlond, q. c. g., 2 car.
- 42<sup>nd</sup> x 30<sup>th</sup> Putnam, grd. hd., q. c. g.
- 50<sup>th</sup> x 30<sup>th</sup> Putnam geared head, q. c. g.
- 26<sup>th</sup> - 48<sup>th</sup> x 14<sup>th</sup> McCabe double spindle.

## Planers and Shapers

- 26<sup>th</sup> Bement Miles Plate Edge.
- 84<sup>th</sup> x 60<sup>th</sup> x 18<sup>th</sup> D. & H. Openside.
- 42<sup>nd</sup> x 42<sup>nd</sup> x 10<sup>th</sup> D. & H. Openside.
- 48<sup>th</sup> x 36<sup>th</sup> x 16<sup>th</sup> N. B. P., Box Table.
- 42<sup>nd</sup> x 36<sup>th</sup> x 12<sup>th</sup> Cincinnati.
- 24<sup>th</sup> Lynd Farquhar Openside.
- 24<sup>th</sup> American, gear box, motor drive.
- 24<sup>th</sup> & 16<sup>th</sup> G. & E. Cone.

- 24<sup>th</sup> Stockbridge, a. c., m. d.
- 20<sup>th</sup> G. & E. gear box motor drive.
- 16<sup>th</sup> & 20<sup>th</sup> Smith & Mills, Cone.

## Grinders

- No. 16 Blanchard A. C., motor drive.
- No. 2 Cincinnati Centerless.
- 14<sup>th</sup> Pratt & Whitney Vert. Surface.
- 84<sup>th</sup> Diamond Face, motor drive.
- Nos. 50, 55, 65 & 75 Heald.
- 48<sup>th</sup> Covell Hanchett Face, Hyd. m. d.
- 20<sup>th</sup> x 96<sup>th</sup> Landis gap cylindrical.
- 14<sup>th</sup> x 72<sup>nd</sup> Norton cylindrical.
- 16<sup>th</sup> x 48<sup>th</sup> Landis crankshaft self con.
- 10<sup>th</sup> x 24<sup>th</sup> Landis self contained.
- No. 2 Ohio Tool & Cutter, m. d.
- No. 2 Norton Tool & Cutter.
- No. 19 Besley 53 vertical disc.

## Milling Machines

- No. C, AB, 4B & 3 Becker vertical.
- Nos. 1 & 1 1/2 B. & S. cone, universal.
- Nos. 5, 4 & 3 Cinci. grd. hd., horiz.
- Nos. 5, 3B & 2B B. & S. grd. hd. hor.
- No. 2 Kempsmith Maximill.
- No. 4G LeBlond geared head.
- No. 3B Milwaukee, P. R. T.
- No. 3 LeBlond cone universal.
- No. 2A Hendy geared head univ.
- No. 4 Cincinnati vertical.
- No. 5 Brown & Sharpe vertical.

## Brakes, Shears & Rolls

- 13 x 3 / 16<sup>th</sup> Ohl press brake.
- 10<sup>th</sup> x 1/4<sup>th</sup> L. & N. No. 610 brake.
- 10<sup>th</sup> x 10<sup>th</sup> ga. L. & N. press brake.
- 13<sup>th</sup> 1/4<sup>th</sup> Hyde Park, 18<sup>th</sup> gap shears.
- 12<sup>th</sup> x 1/4<sup>th</sup> & 10<sup>th</sup> x 1/4<sup>th</sup> Ohl shears.
- 6<sup>th</sup> x 10<sup>th</sup> ga. Niagara, 15<sup>th</sup> gap m. d.
- No. ME-10 Pels punch & shear.
- 4<sup>th</sup> x 4<sup>th</sup> x 5/8<sup>th</sup> Angle bending rolls.
- 16<sup>th</sup> x 1 1/4<sup>th</sup> Wickes bending rolls.
- 10<sup>th</sup> x 1 1/2<sup>th</sup> Bertsch bending rolls.
- 8<sup>th</sup> x 5/8<sup>th</sup> Sculley bending rolls.
- 50<sup>th</sup> x 5/8<sup>th</sup> Niles straightening rolls.

## Presses

- No. 79-B Stoll, geared.
- No. 77 Bliss-Consolidated, geared.
- No. 203D Toledo, st. s., d. c., flywheel.
- No. 74 Bliss-Cons. gap frame flywheel.
- No. 5 V. & O. open back inc. fly.
- No. 8 Perkins knuckle joint embossing.

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- No. 6 Brown & Sharpe.
- No. 2-1" Brown & Sharpe.
- No. 6-2" Brown & Sharpe.

### Boring Machines (Hor.)

- No. 2 Lambert, 4" bar.
- No. 2 Coffman, 3 1/2" bar.
- No. 3 1/2 Universal, 3 1/2" bar.
- No. 2-Lucas, 3 1/2" bar.
- No. 3-A Universal, 3" bar.

### Boring Mills (Vertical)

- 24" Bullard, "New Era".
- 32" King, m. d.
- 36" & 42" Bullard "New Era"
- 61" Bullard Maxi-Mill.
- 62" Colburn, Heavy Duty.
- 72" King.
- 10' Niles.
- 7'-12' Betts Extension.

### Drills (Ball Bearing)

- 2 Spindle Avey.
- 1, 2, 3, 4, 6 Spindle L.-G.
- 1, 2, 3, 4, 6 Spl. Henry & Vright.
- 4 Spindle Sipp.

### Drills (Mfg.)

- Boley Multiple Drillers.
- No. 2 Colburn, 1, 4 spindle.
- 24" Cinn.-Bick., slid. head.
- 24" L.-G. Heavy Duty.

### Drills (Radial)

- 3' Western, timken bearing, m. d.
- 5' American, full universal.

### Gear Cutters

- Nos. 3 & 12 Barber-Colman.
- Nos. 9-H & 18-H G. & E. job.
- No. 7 Fellows.
- Nos. 6, 65, 61, 612 Fellows.
- No. 6-72" Brown & Sharpe.
- 6" & 18" Gleason bevel gear.
- 37" Gleason bevel planer.

### Grinders (Plain)

- No. 2 Cincinnati Centerless.
- Nos. 10, 11, 12 B. & S.
- 6"x32" Norton.
- 10"x18", 24", 36" Norton.
- 10"x50", 72" Norton.
- 10"x36", 52" Landis.
- 14"x36", 50", 72" Norton.
- 18"x96" Norton, m. d.
- 20"x120", 168" Landis, m. d.

### Grinders (Univ.)

- No. 2 & No. 2 1/2 Bath universal.
- No. 2 Brown & Sharpe.
- No. 4-12"x66" Landis.

### Grinders (Misc.)

- No. 1 1/2 Landis, Internal.
- No. 70 Heald, Internal.
- No. 10 Blanchard, surf., m. d.
- No. 3-48" Diamond surface.
- No. 33 Abrasive, surface.
- 14"x36" P. & W. surface.

- 15"x17"x72" Norton, o. s., surf.
- 36"x84" Diamond, hyd. face.

### Lathes

- No. 3 L. & S. Duomatic.
- 8" Sundstrand Stub Lathe.
- No. 12 LeBlond Multi-Cut.
- 13"x48" P. & W., Model "B"
- 16"-18"x6" L. & S. sel. g. h.
- 16"-18"x8", 10" L. & S. sel. g. h.
- 18"-20"x6" & 8" L. & S. sel. g. h.
- 20"-22"x8", 12" L. & S. sel. g. h.
- 24"-27"x12", L. & S. sel. g. h.
- 36"-40"x14" L. & S. sel. g. h.
- 36"x18" L. & S. pat. head.
- 36"x 30" Rahn-Larmon.
- 36"x19" American geared head.
- 66"x21", 36" Putnam t.g., m. d.

### Millers (Plain and Universal)

- Nos. 0, 2, 3-B, 4-B, 5-B, B. & S.
- Nos. 1-B and 2-B Milwaukee.
- Nos. 2 & 3 Cinn. h. p., s. p. d.
- No. 3-B Milwaukee, s. p. d.
- Nos. 4 & 5 Cinn. h. p., s. p. d.
- No. 2-A Brown & Sharpe Univ.

### Millers (Mfg.)

- No. 3 Sundstrand Rigid Mill.
- 18" & 24" Cincinnati automatic.
- No. 33-60" Kempsmith.
- No. 6 Lees-Bradner Thread.

### Millers (Vert.)

- No. 1 1/2 Milwaukee.
- No. 3 Cinn. h. p., motor-in-base.
- No. 4 Cincinnati, h. p., s. p. d.
- No. 5 Brown & Sharpe.

### Planers

- 22"x22"x5" Gray.
- 24"x24"x12" Gray.
- 30"x36"x6", 18" Cincinnati.
- 36"x36"x8", 18" Cincinnati.
- 36"x36"x10" Gray, rev. m. d.
- 36"x36"x12" Liberty.
- 48"x48"x12" Cleveland.
- 48"x48"x14" Liberty.
- 36"x36"x24" & 48"x48"x10" Gray.
- 56"x56"x32" Cincinnati.
- 72"x72"x12" Cincinnati.

### Presses

- No. 4 V. & O., o. b. i.
- No. 5-A Toledo, o. b. i.
- No. 14 1/2 Toledo Horning.
- No. 96-F Toledo, double crank.
- No. 96-I Toledo, double crank.
- H. & W. 50-ton dieing machine.

### Shapers

- 20" American, s. p. d.
- 16" & 20" Gould & Eberhardt.
- 25" Smith & Mills.

### Turret Lathes

- No. 1-A Warner & Swasey.
- No. 2-A Warner & Swasey.
- Nos. 3A Warner & Swasey.
- No. 4-L Gisholt, 9 1/2 h. s.

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90" Niles vert., 2 hds., m. d., p. r. t.  
24", 42" Bullard New Era vertical  
turret lathe, motor drive.

24" Bullard Rapid Production, vertical  
turret lathe, s. p. d.  
37" Niles, vert., 2 heads, motor drive.  
40" King vertical, 2 heads.  
72" Bickford vertical, 2 heads, belt.  
60" Baugh vertical, 2 heads.

## GRINDERS

No. 2 Cincinnati centerless, m. d.  
No. 72 Heald Sizematic, 2 m. d., hyd.  
10x20" Landis cylindrical, motor dr.,  
hydraulic feed, very late.  
10" Pratt & W. hyd. gear grinders,  
3 motor drive, spur and helical gears.  
14x72" Norton, direct motor driven  
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16x72" Landis plain, self-cont., m. d.  
16x52" Landis plain, self-cont., m. d.  
12x120" Landis pl. self-cont., m. d.  
12x52" Landis plain, self-cont., m. d.

No. 14 Brown & S., plain, cyl., belt.  
No. 50 Heald cylinder, hyd. feed.  
No. 55, 60, 65 Heald cylinder.  
No. 120 Gardner combination disc.  
No. 24-53" Gardner horiz. disc, m. d.  
No. 70 Heald internal, clutch head.  
No. 70 Heald internal, plain head.  
No. 1, 3 Brown & Sharpe univ., belt.  
No. 2 Cincinnati universal, belt.  
No. 2, 3 B. & S. auto. surface, belt.  
No. 2 Diamond auto. surface, m. d.  
No. 31, 41 Oliver m. d. drill pointers.

## PRESSES

No. 1½ Bliss Cam.  
D2, DD2 Ferracute d. a. drawing.  
P2, P3, P4 Ferracute Stiles type.  
No. 3 Michigan o. b. i.  
No. 5 Bliss, Stiles type.  
No. 6 Waterbury-Farrel, dbl. crank.

No. 26 Stoll Horning, geared.  
No. 32P, 35 Toledo, Stiles type.  
No. 83C Michigan, double crank.  
No. 166 Toledo toggle drawing.  
S51 Ferracute, double crank.

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18-36"x16" R.-L. g. h. gap, m. d., t.  
20"x8" American, geared head.  
20"x10" American, geared head.  
18"x8" Lodge & Shipley, sel. head.  
16"x6" Lodge & Shipley, sel. head.  
21"x10" LeBlond, geared head, 12  
speed, taper.

14"x6" Lodge & Shipley, sel. head.  
24"x8" American m. p., g. h., taper.  
24"x10" Greaves-Klusman, cone.  
24"x10" Boye & Emme, cone.  
22"x8" Lodge & Shipley, bowl head.  
36"x18" American, cone head, taper.  
27"x12" American, cone head.

## MILLING MACHINES

No. 3, 4 Cincinnati vertical, s. p. d.  
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No. 4 Kemp. vert. Maxi-Miller, m. d.  
No. 4B Becker vertical, m. d.  
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No. 3 Kempsmith universal, cone.  
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National Standard spindle, m. d.  
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No. 3B, 4B H, 5B H Brown & S.,  
pl., m. d., taper sp., p. r. t., late type.  
No. 4 Kempsmith pl. Maxi-Miller, m. d.  
No. 1B Milwaukee plain, s. p. d.  
No. 1½, 2, 3, 4 Cincinnati pl., cone.  
No. 1, 3 Kempsmith, plain, cone.  
No. 1½, 2, 2H, 3 B. & S. plain, cone.  
No. 13B B. & S. pl., flanged spindle.  
No. 13B Brown & Sharpe plain,  
National Standard spindle.

## SHAPERS

28" Averbek, s. p. d., univ. table.  
25" Springfield, m. d.  
24" American, m. d.

25", 20" Smith & Mills, cone.  
24", 20", 16" Gould & E., cone.  
26", 20" Kelly, cone.

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Bridgeford 36"x40", m. d.  
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Lodge & S. 30"x38", gr. d. hd., m. d.

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Bridgeford 36"x60", m. d., (27).  
Gisholt 36"x44", var. s. p. d. m. d., (4).  
Le Blond 28"x38", m. d., (3).  
Le Blond 28"x32", m. d., (2).

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Lees-Bradner No. 12 thread, m. d.  
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Cincinnati No. 4 plain, m. d., (2).  
Ingersoll 24"x24"x12' slab, m. d.

Ingersoll 24"x24"x16' slab, m. d.  
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Putnam 50"x30' g. h., q. c. g., var. spd. m. d.  
Putnam 42"x26' g. hd., q. c. g., 2 carr. two taper att. m. d.  
Pittsburgh 36"x38' g. h., two carr. m. d., (2).  
Pittsburgh 36"x26' q. c. g., g. d., two carr., m. d.  
Putnam 36"x26' g. h., 2 carr., m. d.  
Putnam 36"x28' 3 step cone, q. c. g., d. b. g., (10).  
Putnam 36"x30' gr. d. hd., q. c. g., m. d.  
Lodge & S. 36"x30' g. h., q. c. g., m. d.  
American 36"x21' g. h. taper att. m. d.  
American 30"x22' Super Prod. g. h., q. c. g. m. d.  
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 No. 3 Kempsmith Universal.  
 No. 3 Ryerson S. P. D., Universal.  
 No. 2 Rockford Universal, complete.  
 No. 4 Cincinnati H. P. Pl., S. P. D.  
 No. 4 Cincinnati High Power Rect.  
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 No. 3-B Milwaukee Pl., Dbl. O. A.  
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 No. 4 Cincinnati Vertical High Power  
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$\frac{3}{8}$	5	1	$\frac{3}{4}$	$2\frac{15}{16}$	3.30	1.49
$\frac{7}{16}$	5	1	$\frac{7}{8}$	$3\frac{1}{8}$	3.50	1.58
$\frac{1}{2}$	5	1	$1\frac{1}{8}$	$3\frac{1}{2}$	3.50	1.58
$\frac{1}{2}$	7	2	$1\frac{5}{16}$	$4\frac{13}{16}$	5.10	2.30
$\frac{9}{16}$	7	2	1	5	5.10	2.30
$\frac{5}{8}$	7	2	$1\frac{1}{8}$	$5\frac{1}{8}$	5.30	2.39
$\frac{3}{4}$	7	2	$1\frac{1}{4}$	$5\frac{1}{4}$	5.30	2.39
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**Lathe**, 3x6 Lodge & Shipley DUOMATIC, motor drive.  
**Milling machine**, No. 2 Brown & Sharpe plain, cone drive.  
**Milling machine**, No. 4-B Brown & Sharpe plain, s. p. d.  
**Nibbler**, No. 0 Gray 5/32 cap. 36" throat, m. d.  
**Cold saw**, No. 4-B Cochrane-Bly, s. p. d.  
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 CAG4 Ferracute Adj. Bed, Grd.  
 DG54 Ferracute S. S., S. C., M. D.  
 EG24 Ferracute S. S.  
 2A Bliss, Tie Rod, D. C.  
 Perkins T. R., 10" str., 40" shught.  
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 Shears, 8', 14 ga. Kutscheid.  
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 we have on hand which we offer subject to prior sale.

## LATHES

McCabe 28" 60" x 18" 2-spindle.  
 Hendey 16" x 6", pan bed, taper att.  
 Hendey 16" x 6", pan bed, taper att.  
 Seneca Falls 14" x 6", q. c., all compl.  
 Rockford 16" x 6", q. c., all complete.  
 Seneca Falls 13" x 6", all complete.  
 Champion 12" x 5", all complete.  
 Reed 16" x 6" complete and others.

## MILLING MACHINES

Brown & S. No. 2A univ., s. p. d.  
 Brown & S. No. 2 univ., cone pul.  
 Rockford No. 2B univ., cone pul.  
 Becker No. 25 plain, vises and c. s.

## SHAPERS

Gould & Eberhardt 20" b. g.  
 Gould & Eberhardt 16" b. g., (2).  
 Gould & Eberhardt 14" b. g., m. d.  
 Ohio 20" back geared and others.

## POWER PRESSES

No. 4D Bliss dbl. crk. 42" bet. hous.  
 No. 39 Bliss horning press.  
 No. 21B Bliss geared press.

We are prepared to exchange your idle equipment for machines  
 suitable for your present needs on an equitable basis.

We also pay cash for surplus machinery and complete plants.

**GRAND MACHINERY EXCHANGE, Inc., 140 Centre St., N.Y.C.**

No. 21 1/2 Bliss, 8" stroke, motor dr.,  
 practically new, (2).  
 No. 20 Bliss No. 19C, 19 1/2, 19, 18C, 18.  
 No. 2 Adriatic (3 in stock, new).  
 Nos. 4 & 3 Z & H. 4" stroke, grd.  
 No. 2 V. & O. and several Bk. Wh.  
 (25 Excelsior and Adams Foot Pr).

## ELECTRIC SPOT WELDERS

Toledo 35 k. w., Thompson 35 k. w.  
 Toledo 10 k. w., Federal 10 k. w.

## DRILLS

1-2-3 spindle Hi-Speed.  
 2-24" Avev Hi-Speed.  
 20"-22"-24" B. g. & pl. drill presses.

## RADIAL DRILLS

3 1/2' Morris, gear box drive.  
 3 1/2' American, gear box drive.

## MISCELLANEOUS

Metal Planers, Pwr. Shears, Brakes,  
 Hacksaws, Arbor Presses, Grind-  
 ers, Electric Motors, Hi-Speed  
 Riveting Hammers, 3 Ball Bear-  
 ing Buffs, Motor Drive, etc.

# BEFORE MOVING

Will sacrifice our large stock of used machinery.

SEND YOUR INQUIRIES

**Herben Machinery Equipment Co.**

28 So. Clinton St.,

Chicago, Ill.

## To be Moved Before May 1st

No. 92B Toledo double crank Press, 36" between housing.....	\$500.
4' American Radial, reversing attachment.....	550.
Reed Prentice automatic production lathe, new .....	500.
48" Niles double head vertical boring mill.....	400.
3 spindle 24" Barnes drill, heavy .....	250.
No. 216 Becker, No. 5 taper.....	300.
4' American Sensitive radial.....	150.
36"x1" Bliss Steel reducing roller.....	175.
3'x5' Sheet Metal straightener, 8"-12" rolls.....	125.
Screw machine, Cleveland automatic, 2 1/2" capacity.....	150.

**Chas. Molitor Machinery Co.**

118-124 S. Clinton St.,

Chicago, Ill.

- 1—No. 3 Manville Cold Header.
- 1—No. 3 Manville Hopper Feed Re-header.
- 4—5 ton Euclid Monorail cage operated Cranes.
- 1—No. 27U Buffalo Universal Punch & Shear.
- 15—1200 lb. Chambersburg Board Hammers.
- 2—10 ton Electric Furnaces—American Bridge make.
- 1—84"x72"x22' Niles Planer 24 heads on rail, belt drive.
- 3—Kent, 6 spdl. horizontal Drilling Machines, cabinet base motor drive.
- 1—2" Cleveland, Model "B" Shaft Machine 18" feed, taper attachment, double slide.
- 3—1 3/4" Model F, 4 spindle Gridley Automatics.

**American Machinery Co., 5511 Euclid Ave., Cleveland, Ohio**

## Exceptional Values

- No. 3A Heavy Duty B. & S. Universal Miller, S. P. D.
- No. 1 Kempsmith back geared, cone drive, Universal Miller.
- No. 3B Milwaukee Plain, double arm, geared head, M. D.
- No. 4 LeBlond Heavy Duty Plain Miller, S. P. D.
- 16", 20" and 24" G. & E. Shapers, Gear Box, S. P. D.
- 20" Stockbridge Shaper, cone drive.
- 18"x8' Reed Prentice Geared Head Lathe, S. P. D.
- 20"x10' and 27"x10' American, G. H., M. D.
- No. 11 B. & S. Plain Grinder, over head, M. D.
- 6' American and Cincinnati-Bickford, Plain Radial Drills.

Send for Complete Stock List.

**Iroquois Machinery Co.,**

640 Ohio Street,  
BUFFALO, N. Y.

# INTERSTATE OFFERS—

Arc welders, 150, 200 & 300 Amp.  
Bending rolls, 8'  $\frac{3}{4}$ ", 12'  $\frac{5}{8}$ ", 16'  $\frac{3}{4}$ ".  
Bulldozer, No. 2 Ajax, stop motion.

Brakes, power, Chicago Steel, 10' 10 ga.; 8'  $\frac{1}{4}$ ", 6'  $\frac{3}{16}$ ".

Drills, Radial, 5' Foadick; 4' Dreses.

Flanger,  $\frac{1}{2}$ " McCabe; No. 208 Nia.

Grinders, sur., No. 2 LaSalle; No. 2 W. & M.; No. 2 Diamond.

Grinders, cyl. Norton 10x36" & 14x72"

Ironworkers, Pels No. 16, Schatz 4x $\frac{1}{2}$ ".

Keyseaters, No. 2 Davis; No. 2 M. & M.

Lathes, 36" swing x 41' bed \$1000; 48" swing x 17' bed, \$750.

Lathes, Hendey 20"x12", 16"x6' l.a.; 16"x6' geared head m.d.; 21"x14'.

Millers, Universal; No. 2 Clev. v. h.

Press, Brake, 10'  $\frac{3}{16}$ " L. & N.; 10'  $\frac{3}{16}$ " Ohl.

Presses, o. b. i., Niagara No. 6 b. g. 5" str.; No. 3 American Can; No. 30 Bliss Arch; Toggle Drawing, Bliss No. 408-B, 84" bet. tie rod frame; No. 14 Bliss.

Horn., No. 26 Cons. 12" st.; No. 40 Bliss.

Double crank, Overhanging 27D Bliss, 5" st., 6" bet. uprights. SS, No. 68F Nia., 6" st., 84" bet.

Roller die mach., 7 pr. sp., m.d., cut-off.

Friction Saws, No. 0 & No. 2 Ryerson.

Screw machines, No. 4 W. & S. Univ; No. 7 Foster; & No. 3A W. & S.

Shears, Quickwork, 1" cap. 48" thrt.; 10' Niagara,  $\frac{3}{16}$ " M. D.

Shapers, 24" G. & E.; 28" Am. s. p. d.

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Wells Wire Machinery, Coilers, Crimpers, Knotters, etc.

## INTERSTATE MACHINERY CO., INC.

130-2 S. Clinton St., Chicago, Ill.

## Sensitive And Heavy Duty Drills

- 1—Single Spindle Avey 7" overhang H. S. Drill.
- 1—2-spindle Avey 12" overhang h. f. Drill.
- 3—Single Spindle Allen 7" overhang h. f. Drills.
- 1—2-spindle Allen 7" overhang, with 10" h. f.
- 3—2-spindle Allen 7" overhang h. f. Drills.
- 1—2-spindle Allen Plain Bearing Drill.
- 1—3-spindle Allen 7" overhang h. f. Drill.
- 1—4-spindle Allen 7" overhang h. f. Drill.
- 1—4-spindle Allen 8" wide belt p. f. with pump.
- 2—21" Cincinnati Sliding Head with tapping attachment.
- 2—24" Cincinnati with or without tapping attachment.
- 1—No. 2 Single Spindle Colburn Mfg. Type Drill.
- 2—4-spindle No. 2 Colburn Mfg. Type Drill.
- 1—7-spindle Foot-Burt Rail Type Adj. Drill, No. 4 Taper.
- 3—No. 217 Baker Single Havy Duty, m. d.
- 1—No. 3-D Minster 3- $\frac{1}{4}$ " capacity plain table.
- 1—Model B 250 H NATCO Single Hydraulic Vertical.

**WE CARRY A FULL STOCK OF USED MACHINE TOOLS—**  
*Your inquiries will be appreciated.*

**The Strong, Carlisle & Hammond Co.**

2832 East Grand Blvd.

DETROIT, MICHIGAN

1392 West Third St.

CLEVELAND, OHIO

## SPECIALS

Leland & Gifford 4 spindle High Speed B. B. Drill, No. 2 M.T.,  
7" overhang, Price ..... **\$395.**  
4" Hammond B. B. Radial Drills, jack-knife type, No. 2 Morse  
Taper, ..... **\$225.**  
24" Cincinnati Shaper, back geared, A. C. Motor Driven,  
swivel vise, ..... **\$675.**

*Complete stock of fine machine tools*

**SURPLUS STOCK & MACHINERY CO., Inc.**  
1133 W. Lake Street, Chicago, Ill.

### A Few Almost New Machine Tools from Our Stock

Boye & Emmes 30"x24" Taper Attached Motor Drive Lathe, Like New.  
16" G. & E. & 24" Cincinnati Motor Drive Shapers.  
3—No. 2 B. & S. Motor in Base Surface Grinders Mag. Chk. & fully elec. equip.  
12", 14", 16" and 18" Hendey Lathes.  
B. & S. and Cincinnati Plain & Univ. Millers with accessories.  
6x6, 9x9 and 13x16 Peerless Motor Drive Hacksaws, (3).  
Nos. 1 and 2 Brown & Sharpe Vertical Millers.  
Drills, 1 to 5 Sp. 8 & 12" overh. h.s. Allen, Avey, Leland & G., Henry & W., etc.  
Nos. 1 and 2 Brown & Sharpe Universal Grinders, fully equipped.  
Many other fine up to date machines in our big stock.

**Wiener Machinery Co., Inc.,** 137 Centre Street,  
NEW YORK

### CREAM OF THE CROP

#### BORING MILLS—VERTICAL

10—16" Niles, Extension Type.  
120" N.B.P. Gear Feed, 2 swivel hds.  
76" Bullard Standard, 2 swivel heads.  
54" Bullard rapid production type.  
48" Colburn, power rapid traverse.

#### ENGINE LATHES

80"x24" Pond, with countershaft.  
36"x40" N. B. P., with countershaft.  
36"x26" Bridgeford, full geared hd.

#### MILLERS

No. 4G LeBlond, motor drive.  
No. 3 Cincinnati plain, pwr. rap. tr.  
No. 2 Kempenith maxi-mill, p. r. t.  
Becker vertical, model C.

#### GRINDERS

84" Diamond face, 36" seg. wheel.  
14" P.&W., surface, vert., ball bear.

#### RADIAL DRILL

7" Cincinnati Bickford, plain.

*Priced Low—Partial Listing—Send Your Inquiries*

### ROSENKRANZ & WEISBECKER

2309-A Singer Building, New York City, N. Y.

## REAL BUYS

**GRINDER**, Brown & Sharpe No. 1 Universal ..... **\$550.**  
**GRINDER**, Heald No. 55, Complete ..... **\$425.**  
**SHAPER**, Cincinnati 24", B. G., M. D. .... **\$525.**  
**SHAPER**, Cincinnati 20", B. G., C. D. .... **\$375.**

### MONEY BACK GUARANTEE

Other Tools Similarly Priced

**Aaron Machinery Co.,** 176 Lafayette St.,  
NEW YORK

# "READY TO SHIP"

No. 4 Cincinnati Universal Milling Machine, High Power Cone Drive. Full equipment including vertical head.

No. 3 Cincinnati Universal Milling Machine, Quick change feeds, cone drive.

No. 2A Brown & Sharpe Universal Milling Machine, Motor Drive.

No. 13 Brown & Sharpe Universal Tool Room Grinder, Belt Drive.

36"x8" Ingersoll Planer Type Vertical Spdl. Milling Machine, Motor Dr.

24" Bullard New Era Vertical Turret Lathe, S. P. D., Serial over 11,000.

No. 2 Norton Universal Cutter and Reamer Grinder, Belt Drive.

Several No. 2 Brown & Sharpe Surface Grinders, Belt Drive.

No. 3 Diamond Surface Grinder, with 48"x12" Magnetic Chuck B. drive.

Allen High Speed Sensitive Drills, Two, Three, Four and Six Spindles.

16" Cincinnati Gear Hobber, Single Pulley Drive.

60"x48"x12" Niles Bement Pond Planer, two heads on cross-rail, one side head. Belt or motor drive.

48"x18" Lodge & Shipley Screw Cutting Lathe, Cone pulley geared face plate drive.

24"x48"x12" McCabe Screw Cutting Lathe, cone driven.

4-Lodge & Shipley Lathes, 18"x10" Geared Head, Taper, Pan Bed, Single Pulley or Motor Drive.

10 Ft. Pexto Power Squaring Shear, No. 2120, Capacity 14 gauge.

*Other just as desirable tools in our large stock.  
Your inquiries requested*

**MORRIS MACHINERY COMPANY, Inc.**  
85-119 Chestnut Street Newark, New Jersey

## QUALITY TOOLS—

Drill, 3½" Amer. tri. pur. radial, s.p.d.

Drill, 3½" Dreeses, rad., s. p. d.

Drill, 3" American sensitive radial

Drill, No. 2B Edlund, h. s., b. b.

Drills, 1, 4 & 6 sp. Avey & Allen, h. s.

Gear hobber, 18-H & 12"x10" G. & E.

Grinder, No. 2B. & S. sur., ck., gen., bkr.

Grinders, Nos. 2, 3 W. & M. surf. cks.

Grinder, No. 2 B. & S. cutter & univ.

Grinder, No. 2 B. & S. universal.

Keyseater, No. 0 Baker.

Lathe, 14"x8" Rockford, q. c. g.

Lathe, 15"x6" C. & J. grd. hd., m. d.

Lathe, 15"x6" P. & W., semi q. c. g.

Lathe, 13"x8" Sebastian, q. c. g.

Lathe, 12"x6" Hendey, q. c. g., t. a.

Lathe, 12"x5" Hendey, q. c. g., t. a.

Lathe, 18"x8" Walcott, q. c. g., t. a.

Lathe, 20"x42"x8" Fay & S., ext. bed.

Lathe, No. 4 Millholland turret.

Lathes, No. 0 B. & O. turret, collets.

Lathe, 7"x32" P. & W. bch., thrd. att.

Lathe, 10"x4" Champion, bench.

Mill, 3-A Univ. hor. boring, m. d.

Mill, 3" bar Lucas hor. boring, s. p. d.

Miller, No. 3 Cincinnati plain, s. p. d.

Miller, No. 3 K. & T. pl. dbble. o. a.

Miller, No. 2 Rock. pl. & univ., s. p. d.

Miller, No. 1 Kemp. univ., d. h., etc.

Miller, No. 25 Becker plain, bk. grd.

Miller, No. 3 B. & S. pl., arr. m. d.

Millers, No. 10 U. S., No. 6 W. h. y. hd.

Press, No. 1½-A B. is togg'e.

Press, No. 73 W. Bliss.

Press, 10 ton Metalwood hyd. forcing.

Saw, 9"x9" Peerless hi. sp. j., m. d.

Saw, 6"x6" H. & R. band.

Scleroscope, Model "C" & "D" Shore

Screw mche., No. 2 P. & W. hd.

Shapers, 16", 24" & 28" G. & E., b. g.

Shaper, 7" Rhodrs, crank.

Shaper, 15" Hendey friction

Shaper, 16" Smith & Mills, crk., b. g.

Shaper, 24" m. d., 28" belt, G. & E.

**GEO. M. BERNSTEIN & CO.,** 12 S. CLINTON ST., CHICAGO, ILL.

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## A FEW TOOLS SELECTED AT RANDOM FROM OUR STOCK

No. 3 LODGE & SHIPLEY DUOMATIC LATHE.

15" GLEASON SPIRAL BEVEL GEAR FINISHING  
GENERATORS.

144"x5/32" NIAGARA GATE SHEAR Motor Drive.

156"x3/16" HYDE PARK GATE SHEAR 18" GAP  
Motor Drive.

LIBERTY OPENSIDE PLANER, 48x48x8"  
Motor Drive.

*Hundreds of other tools to select from.*

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**Indianapolis Machinery & Supply Co., Inc.**  
1959-69 South Meridian St., Indianapolis, Indiana

---

### SHAPERS AND GEAR CUTTERS

16" Ohio Heavy \$400.

18" G. & E. Gr. Hob., Sgl. P. \$450.

### GRINDERS

1—No. 1½ Cinc. T. & C. \$275.

2—No. 2 B. & S. Sur., Mag. Ck. A. C.

1—No. 2 Webster & Perkins, Univ. \$375.

1—No. 3 Dia. Sur., Mag. Ck. \$525.

### DRILLS

26" American Radial, Gear Box.

4" Morris.

6" Amer. (not Enc. Hd.) \$1100.

### BORING MILLS

51" Niles 2 Heads \$650.

2—36-44" Niles Side Hd. A.C. Mtrs.

2—24" Bullard New Era.

60" Bullard, 2 heads \$675.

Lucas Horizontal, 2½" Bar.

### LATHES

14x6 Hendey.

14x6 Prentice G. H.

20x10" Hendey G. H., Taper \$950.

19x10" LeBlond, Taper.

26x12" American 3 step, Chuck.

11x16" Artisan-Gap, A. C. Motor.

2—14x6 Bradford-Taper-Reliev. Att.

16x10" P. & W., Taper \$425.

3—26x14" Putnam.

20x10" Hendey-Gear Box \$575.

### MILLING MACHINES

No. 2-A B. & S. Univ. S. P. Vert.  
Attachment \$875.

2—No. 1-B K. & T. Pl. S. P. \$550.

No. 1½ American Plain \$275.

No. 4 Cincinnati S. P. \$1200.

No. 4 LeBlond, Universal \$1250.

### METAL WORKING MACHINERY

No. 164 Toledo Drawing Press.

No. 5-A Toledo, O. B. I.

2—No. 20 Bliss, O. B. I., 2" Str.

No. 36 Waterbury Farrel, Geared.

11x14 Worthington Air Compressor,

A. C. Motor and Belt.

8"x3/16" Square Shear.

36"-150 Ton Caldwell Wheel Press  
\$475.

No. 6 Niagara, 3" Str.

No. 21½ Bliss, O. B. I., 3" Str.

52" 16 Ga. Niagara Sq. Shear.

No. 10½ Badger Punch & Shear.

10"x14 Ga. Square Shear.

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**The Norton-Broadway Machinery Co.**  
Station—N—Cincinnati, Ohio

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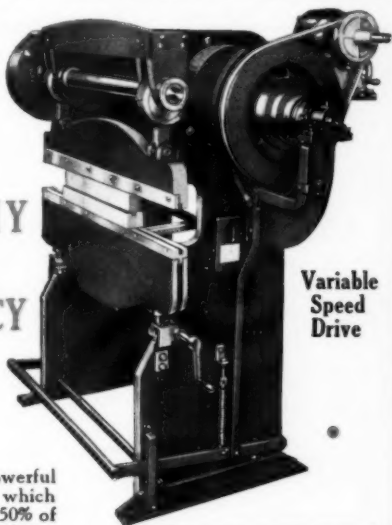
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# CHICAGO PRESS BRAKE

NO.  
253

*for*  
**ECONOMY**  
*and*  
**EFFICIENCY**



**Variable  
Speed  
Drive**

**A** SMALL, powerful press brake which can do 40 to 50% of forming work formerly required by large machines. It is efficient and economical to operate. Compactly constructed, it saves floor space and being three to five times lighter than other machines of similar capacity it can be easily moved. The price is negligible.

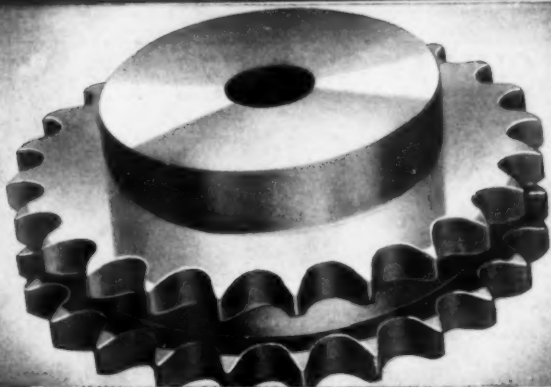
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Bulletin and Low Price*

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of Sheet Metal  
Sections Used For**

Stoves  
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